Final Report

The State of Electronic Commerce In Atlantic Canada

Prepared for

Atlantic Canada Opportunities Agency

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Executive Summary

Although Canada is positioned to take advantage of the rapid growth in e-commerce, and has already achieved an enviable degree of connectivity on the Internet, it is not pursuing its advantage aggressively and is falling behind the United States. Further, evidence suggests that Atlantic Canada is now lagging behind the rest of Canada. Atlantic Canadian Small and Medium Enterprises (SMEs) are significant users of the Internet, but, with the exception of Nova Scotia which is at the national average, trail behind in developing an e-commerce presence. In general, the Internet is not playing a major business role among SMEs in the region. If Atlantic Canada continues to fall behind the rest of Canada, then it may become difficult to catch up in this fast developing economic area.

This report examines the state of e-commerce among SMEs in Atlantic Canada, including the status of e-commerce service suppliers, the efforts by governments, academic institutions and other agencies to promote e-commerce activity. It also summarizes the results of a survey of SMEs who already have established a website, to determine how these firms have progressed in establishing an e-commerce presence.

The report concludes that SMEs are lagging significantly and that the single factor causing this lag is a lack of awareness of what e-commerce is and how it can benefit an SME. Related to this awareness issue are the following factors:

- Not only do SMEs not understand the technology associated with e-commerce, but they lack a knowledge of the marketing skills and business strategies needed to succeed;
- SMEs tend not to acquire the mechanisms to provide full transaction capabilities on the Internet;
- There is a lack of knowledgeable bankers and investors who are fully cognizant of the barriers and advantages of e-commerce;
- There are misunderstandings among SMEs and e-commerce service suppliers about the requirements and associated costs to set up a merchant account with a bank for Internet transactions;

- There is a need for ubiquitous high speed connectivity throughout Atlantic Canada so that SMEs everywhere in the region can benefit equally;

- There is a lack of co-ordinated government programming to assist and encourage SMEs to participate in e-commerce.

There has been some effort recently to establish e-commerce programming, but as yet it lacks focus and a regional dimension. What is presently absent is a strong regional champion for e-commerce that will ensure that it receives the attention and support that is required if we are to catch up with the rest of Canada and assume a leadership role.

We need to develop programs in Atlantic Canada that raise the e-commerce awareness of SMEs and provides them with the knowledge that will allow them to make informed decisions on becoming e-commerce enabled. SMEs need to be aware of all the costs that they may incur to become fully enabled, including the costs to ensure that websites are properly linked to other sites, are well-advertized and receive ongoing attention and maintenance. Concerns expressed by SMEs and e-commerce service suppliers regarding banking could be resolved through a workshop that brings together all the stakeholders to discuss the issues and reach consensus on the solutions.

There are resources in the region, in the public sector, in universities and colleges and within the private sector that are knowledgeable and could assist in developing e-commerce awareness programming. The e-commerce service suppliers have also undergone a shake-out and are now well prepared to assume a role in assisting firms who seek to become e-commerce enabled.

The challenge is to provide the leadership that will bring together all the resources that do exist in Atlantic Canada to achieve the goal of increase SME participation in e-commerce. An initial step should be make e-commerce awareness a priority for all agencies that deal with the concerns of SMEs.

1.0 Introduction

The term electronic commerce (e-commerce) refers to the conduct of business among firms with the support of newer networked information and communication technologies (ICTs). E-commerce is a rapidly evolving group of new technologies and new business models that, in the past few years, has significantly changed the way of doing business for many companies in many sectors of our economy. *Predictions of growth for e-commerce vary widely, but all forecasts indicate that substantial growth has taken place in the past two years and that this growth will continue to accelerate for the foreseeable future, making e-commerce a major component of developed national economies.* While business-to-consumer e-commerce (B2C) has received the attention of the popular press with the success of the "dot.coms", business-to-business e-commerce (B2B) is more significant in terms of value of transactions and structural effects on the economy. The rapid growth of B2B is precipitating major changes in the ways that companies do business with each other as they establish new value chains in which transactions and communications are supported by new electronic technologies. Dynamic electronic trading communities are forming in many industries. This is leading to new business opportunities but also to the well-founded concern that those companies that are excluded experience significant loss of business. Many companies are therefore moving quickly to enable themselves to conduct e-commerce. Their efforts are not always successful since in many cases they must learn to use new technologies as well as new business practices.

E-commerce originated about 30 years ago with the development of systems to transfer electronic business documents between companies and make electronic payments. Electronic Data Interchange (EDI) introduced innovations in the way that business documents were exchanged and was hailed as a technology that would significantly reduce routine business transactions among trading partners. However, EDI had limitations because transactions could only take place between companies that had installed systems using industry-specific technical standards. The advent of the Internet, which allows a greater range of communication among different kinds of computer networks, and rapid exchange of information among consumers and businesses, has done much to overcome the constraints of earlier technologies such as EDI. It is only in the past

few years, as the Internet reached a threshold adoption level amongst both business and consumers, that e-commerce could begin to assume the importance that it is achieving today.

The Internet has served as a liberating influence on business-to-business exchange of information, as it allows ready access to numerous companies, a ready exchange of documents without complicated and limiting protocols, and most important, it allows digital information to be exchanged in many different forms (audio, graphics and text) between companies and between companies and consumers. Further, the cost of becoming an e-commerce user has become the cost of an Internet connection, making participation, at least at the most basic level, relatively inexpensive. In turn, companies that adopt an Internet presence and begin to trade electronically, either with other businesses or with consumers, realize several advantages, such as :

- Internet-based e-commerce reduces many costs associated with communicating with customers and clients;
- if products are digital, distribution costs can be reduced to almost nothing;
- the Internet allows a company to conduct business everywhere, all the time;
- e-commerce is a "disruptive" technology that creates new opportunities because the rules for conducting business change more quickly than incumbents can adapt to the changes;
- the Internet allows an e-commerce enabled company to develop very close relationships with customers;
- it permits customers a high degree of self-service;
- it reduces barriers to market entry in many industries; and
- ease of communications allows a company to customize its products and services.

As has been the case with the spread of Internet access, e-commerce adoption has not been

uniform either globally or within the North American region. Developed countries are much quicker to adopt than under-developed countries (price, quality of connectivity and availability of technical skills probably being the most important factors). Within North America, the United States has moved ahead of Canada in all forms of e-commerce and also in consumer purchasing on the Internet. It appears that Atlantic Canada is presently lagging behind the rest of Canada in the rate at which companies are adopting e-commerce and also in consumer use of e-commerce.

The Atlantic Canada Opportunities Agency (ACOA), as the federal agency responsible for economic development in Atlantic Canada, recognizes the importance of Atlantic Canadian companies and organizations being at the forefront of this essential technology. The purpose of the present study is to ensure that the Agency has the best and most up-to-date information on e-commerce to guide its activities. The main objective of the study is to gather background intelligence on the state of e-commerce in Atlantic Canada in order to establish a baseline for the measurement of changes in the state of e-commerce over time, and to assist the Agency in its planning and implementation of initiatives with other stakeholders.

This report therefore provides an overview of the status of e-commerce in Atlantic Canada that examines all aspects of e-commerce, including:

- statistics on e-commerce in Atlantic Canada and how the region's performance compares with the rest of Canada;
- a profile of the e-commerce products and services supply sector in the region;
- identification of key players and their roles;
- an assessment of the level of maturity reached by a cross-section of small and medium-sized enterprises (SMEs) involved in both business-to-business and business-to-consumer e-commerce in the region (including a survey of SMEs);
- representative case studies of selected SMEs who have succeeded in e-commerce; and

- identification of impediments and opportunities for the adoption of e-commerce in Atlantic Canada.

1.1 E-commerce: Working Definitions

Like many recent innovative processes that have emerged in the post-industrial age, e-commerce has become an ubiquitous term, often misunderstood. In this report we will use the terminology that has been adopted by the Government of Canada in the "Canadian Electronic Commerce Strategy" to ensure consistency:

"Electronic Commerce can be defined narrowly or broadly. Broader definitions include any kind of transaction that is made using digital technology, including open networks (the Internet), closed networks such as electronic data interchange and debit and credit cards. The narrower definition specifies that electronic commerce includes only transactions using Transmission Control Protocol/Internet Protocol. Using this narrower definition, electronic commerce is thus seen simply as an Internet application. While the present focus of attention and most of the growth projections are currently based on electronic commerce using the Internet, the broader definition cannot be disregarded and is included where appropriate." (Paraphrased from "The Canadian Electronic Commerce Strategy", Government of Canada).

There is often confusion between the terms e-commerce and e-business. The following definitions and discussion provide a distinction between these two facets of the "electronic enterprise".

Electronic commerce "describes the process of buying and selling or exchanging products, services, and information via computer networks, including the Internet". (E. Turban et al). It is to be noted that most recent e-commerce strategy texts emphasize the need to use electronic support to develop and maintain relationships throughout the transaction cycle, which includes signaling, information exchange, negotiation and after-sale service. E-business is "the complex fusion of business processes, enterprise applications, and organizational structure necessary to create a high-performance business model". The "core of the enterprise itself is going through a metamorphosis" and the "fundamental structure of the next generation e-corporation" is "built on

an interconnected web of enterprise applications" (R. Kalakota, et al). In other words, e-business requires internal integration and IT enablement in addition to the e-commerce requirements of external transaction processing and relationship maintenance. While there is clearly a distinction that needs to be made between e-commerce and e-business, the two terms together span a broad range of interactions that take place between companies and consumers, between companies and within companies. It is recognized that there may be important differences between the needs of companies involved in e-business and those involved in e-commerce. This report will favour the term e-commerce when referring to the broad range of activity including both e-business and e-commerce, but will refer to e-business when it is necessary to make a distinction.

Other useful key terms (paraphrased from "The Canadian Electronic Commerce Strategy" for consistency) include:

- ***Electronic commerce*** *includes all transactions using electronic means: the Internet, electronic data interchange and debit and credit cards;*

- *The* ***Internet*** *is an international network of networks that allows different computer users to share information and communicate interactively. It allows computers and networks to communicate openly and effectively regardless of make, architecture, speed, manufacturer, connection or resources.*

- ***Electronic Data Interchange (EDI)*** *is a set of standards for compiling and transmitting information between companies, often over private communications networks called "value-added networks".*

- ***Business-to-business e-commerce (B2B)*** *describes the transactions and information interchanges that take place between businesses supported by information technology infrastructure consisting of hardware, software and enabling services.*

- ***Business-to-consumer e-commerce (B2C)*** *describes the transactions and information exchanges that take place between business and consumers.*

- ***Intranets*** *are electronic communications systems that companies use to distribute information and data between individuals within the company. Intranets can span multiple business locations via the Internet and usually operate behind a secure "firewall" to ensure the confidentiality of all information on the Intranet.*

- ***Extranets*** *occur when a company allows selected business partners to access its Intranet to share information. These partners may include suppliers, distributors and other authorized users who may connect to the company's network via the Internet or through a virtual private network.*

1.2 E-Commerce and Small and Medium Enterprises in Other Jurisdictions

E-commerce is rapidly becoming an important vehicle for trade. Companies and governments are realizing that there are opportunities to be gained by early adoption of e-commerce, and equally that there are losses that might be incurred if steps are not taken to become a part of the process. As is the case with many innovations, the rate of uptake differs widely from one jurisdiction to the next. This section opens by touching on the penetration of e-commerce in some leading developed countries and trading blocs, then discusses some measures taken by those jurisdictions to support and foster the expansion of e-commerce. The section closes with some observations arising in the literature, regarding the implications of e-commerce for small and medium-sized enterprises.

E-commerce has been able to expand rapidly due to the extraordinary evolution of the Internet in the past decade. While the Internet has been available in the scientific community for nearly 30 years, and basic e-mail has been in fairly wide use in the business community for more than a decade, the World Wide Web (WWW) has only been around for seven years. Nevertheless, in this short time, it has become widely adopted. In both the United States and Canada, the number of households with a PC is now over 50%, and the number of households connected to the Internet is 34% and 39% respectively (Ernst and Young, 2000). The penetration of PCs and the Internet in the business world has been equally dramatic, opening the way for the rapid emergence of e-commerce.

E-commerce is dominated by the United States, which in 1998 accounted for 74% of global activity. The United States' leadership position in e-commerce reflects its early adoption. As other jurisdictions move to catch up, its overall share is predicted to decrease to 54% by 2003. *Canada's share, meanwhile, was 7% in 1998 and is forecast to decrease to 4% by 2003.* The big growth in share is expected to occur in Western Europe, where adoption was initially slow, but is now rapidly accelerating, in part due to needed changes in infrastructure. These jurisdictions also offer some interesting examples of government measures to foster the adoption of e-commerce among SMEs.

In the **United States**, one measure involves the establishment of sixteen Electronic Commerce Resource Centres (ECRCs) across the country. The mission of the centres is to e-commerce enable smaller suppliers to the defense industry. Once enabled, the companies can compete in civilian sectors as well. As such, these centres are "a catalyst for a vast network of small- and medium-sized enterprises to adopt electronic commerce. These enterprises use advanced electronic commerce technologies to provide the Department of Defense and other federal organizations with low-cost, high-quality products, goods, and services." Each centre provides the following services:

- technology and applications development;
- outreach and awareness-raising via participation in trade shows, conferences, and other industry events;
- education and training; and
- technical assistance and consulting.

The clients of the ECRCs are industry and public sector organizations, including Economic Development Organizations (EDOs), small business development centres, procurement assistance centres, state and regional Manufacturing Extension Programs, and the National Institute of Standards and Technology (NIST), Manufacturing Extension Partnership (MEP) Centers, and educational institutions. (source: http://www.ecrc.ctc.com/)

The **Australian** economy is heavily dependent upon SMEs, which make up 96% of all enterprises in the private, non-agricultural sector. The Australian Business Network is an independent organization that brings together governments and industry to encourage the use of e-commerce amongst SMEs under the banner of AUSe.NET. The objective is to promote awareness and adoption of e-commerce amongst Australia's SMEs. This is achieved through workshops, training activities, news of events, distribution of e-commerce products and services and an online procurement program. The program is aimed at enhancing the e-commerce competitiveness of Australian SMEs globally.

Ireland has also set up an organization (TradeNet) to encourage companies to access electronic information and participate in e-commerce. TradeNet Ireland is a web-based brokering service that allows businesses to find customers or suppliers. Established in October 1999, it has about 400 members. These programs focus to a large extent on providing SMEs with the information to make informed decisions regarding their entry into e-commerce, and providing direction to companies that are beginning to build an online presence.

AGENT-ISME (Assessment of Global Engineering Technology Usability and Integration for Small and Medium-sized Enterprises) is a program supported by the **European Commission**. Its purpose is to encourage SMEs to adopt e-commerce by developing pilot demonstrations that show clearly the advantages and benefits of communication technologies. AGENT-ISME's approach is as follows:

- Analyze the needs and requirements of SMEs for e-commerce.
- Search and assess the needed and required technology for e-commerce.
- Look for appropriate existing technologies, which can be integrated into an electronic commerce platform, rather than developing new technology.
- Once the technologies have been selected, develop demonstration projects, to show the possibilities of e-commerce and to clearly stress the benefits for SMEs.

- Disseminate the results to a wide range of SMEs to quickly gain a critical mass for an active usage of the electronic marketplace.

Participants in this program can receive:

- Internet usage training course for beginners (on line and off line);
- advanced training courses in e-commerce;
- on-line consulting;
- product catalogues, ordering, payment, authentication;
- Electronic Transactions Integration - Security;
- multi-criteria search strategies for products and services;
- access to global information services;
- on-line market promotion of products and services; and
- data, know-how, and methodologies exchange.

_www.agentisme.com/en/index.html

It should be noted, however, that the market, especially in the US, is presently moving much more quickly than governments in terms of delivery of services to SMEs. Although the Department of Defense's ECRC's have played an important catalytic role, the real action now is widely held to be in the "dot com" startups funded by venture capitalists and merchant banks. There is only a faint equivalent in Canada of this type of activity and the number of Internet companies reaching the IPO (Initial Public Offering) stage in Canada is quite low.

The e-commerce supplier industry also plays a key role in fostering the expansion of e-commerce. Providing support for small customers has been a challenge for the Information and Communications Technology (ICT) sector since the 1970s, when smaller computers systems

began to become available and were bought by companies without specialist Information Technology (IT) departments. However, many suppliers of services and technology are actively attempting to develop the market for e-commerce solutions for SMEs. They are vigorously experimenting with combinations of products, services, and pricing, often with the endorsement of public agencies. For example, in the United Kingdom, in December 1998, a coalition of Internet and e-commerce companies including Microsoft, 3Com, Lloyds TSB (a bank), and Cobweb teamed up with the Federation of Small Businesses (FSB) to offer free Internet access and website hosting to FSB's 122,000 members. Such aggressive marketing of connectivity has had the benefit of rapidly moving the UK small business sector online, and in the case of the sponsoring partners, the effect of rapidly consolidating their position as service providers.

These examples serve to indicate a growing effort by various jurisdictions in developed countries to encourage greater e-commerce activity, especially amongst SMEs. Most of these efforts, however, may not be directly applicable to Atlantic Canada, due to differences in governance, size of the populations and regions, and different levels of available infrastructure at this time. However, there is one notable theme that does connect most of these programs, whether they be led by governments or industry: *the need for awareness*. Without being reasonably informed about e-commerce, its implications, requirements and associated costs, it is very difficult for SMEs in any jurisdiction to make the correct decisions that will lead to success.

This study's review of available literature and data has also yielded some insights about the e-commerce motivations, barriers, and support needs of Small and Medium Enterprises (SMEs). Many SMEs have been quick to realize the advantages of e-commerce, and indeed have led innovation in many instances. *SMEs see advantages in adopting e-commerce because it assists them to lower transaction costs; provides them with access to global markets that would normally be beyond their grasp; and may free them from proprietary value chains.*

Barriers to e-commerce for SMEs can be technological, but may also be financial, organizational, or related to weak human resources or logistics. For example, SMEs could be disadvantaged by limited ability to grow quickly, achieve economies of scale, and bring products to market. These

factors may make them vulnerable to buy-out by large firms.

There are several different kinds of SMEs, and therefore their support needs vary greatly:

- firms that are members of established supply chains need to synchronize their adoption of electronic commerce with other members of the supply chain and especially with the "hub" firm;
- start-up firms in electronic commerce require an environment in which they have quick access to legal, technical, and financial skills and services;
- SOHOs (small offices and home offices) and teleworkers require access to smaller-scale office systems, affordable connectivity, reliable transportation, and reliable access to markets for their services; and
- "traditional" SMEs (small retailers, service firms, or manufacturers) that are not members of formal supply chains adopt e-commerce at widely varying rates, largely depending on their perceptions of the costs and benefits of adoption.

The e-commerce support needs of SMEs vary greatly. *Many small firms do not have access to the Internet, or even understand the need for it.* The viability of SMEs requires that they examine the consequences of not adopting e-commerce for their future survival. These firms need technical assistance, training, and information in order to make informed decisions regarding e-commerce. At the other end of the spectrum are high-tech start-ups that typically form around a nucleus of advanced computer and information technology expertise. These are cutting edge Internet and e-commerce firms. They do not need technical assistance or training. Instead, they need access to capital, technical services, and a fair and consistent legal and regulatory environment for innovation (one that is not biased in favour of large firms). They need, for example, intellectual property protection, secure electronic transactions, and fair resolution of domain name disputes.

A number of good websites[1] have appeared to provide guidance to entrepreneurs and small business owners. These websites range from basic advice on IT and e-commerce issues, to those that provide complete e-business support to entrepreneurs or that attempt to match entrepreneurs with potential investors. They can be a good information source both for those seeking to begin establishing an e-commerce presence, or those struggling through the initial stages after start up.

Some basic questions about SMEs in the digital economy remain to be answered. Do the opportunities of Internet and e-commerce outweigh the threats for entrepreneurs and SMEs? What roles do startups and small firms play in different segments of the digital economy? How do the characteristics of different parts of the digital economy affect the scale of firms? How do these characteristics affect decisions to seek financing, spin off, merge, or sell out? Further research is needed to do justice to these issues, both globally and in the Atlantic Canadian context.

1.3 Progress of E-Commerce in Canada and the Atlantic Provinces

As with most new technologies, considerable advantages accrue to early adopters. Canada has positioned itself well to take advantage of the rapid growth in e-commerce. It has established infrastructure, including a very high degree of connectivity, with a broadband backbone that connects most major centres in the country. Government has expressed a strong commitment to fostering the expansion of e-commerce and connectedness. Canada has also created a cadre of well-educated people, trained to work in an e-commerce environment. One might expect, then, that Canada would be leading the world in e-commerce activity. However, the recently released report, "Fast Forward: Accelerating Canada's Leadership in the Internet Economy" (BCG, 2000),

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1. Workingsolo.com (http://www.workingsolo.com/), a resource site for entrepreneurs and individuals with home offices. Onvia.com (http://www.onvia.com/), a one-stop-shopping and ideas place for SMEs. Sme.com (http://www.sme.com/) and its various national affiliates, including Canada (http://www.canadaone.com/), which is still mainly a collection of links. CanadaOne (http://www.canadaone.com/) is a portal for Canadian SMEs, offering articles, links to resources, and interactivity among SME owners. Freeagent.com (http://www.freeagent.com/) is an electronic clearing house for independent contractors. There are also sites that provide complete e-business support services to individual entrepreneurs. For example, bigstep.com (http://www.bigstep.com/), "where e-businesses is everybody's business". Finally, there are sites explicitly devoted to creating communities of interest around internet entrepreneurship and matching entrepreneurs with investors. An example is FirstTuesday, a site for European Internet entrepreneurs (http://www.firsttuesday.com/).

asserts, "*..Canada is well-positioned to take advantage of the opportunities offered by e-business, but is not aggressively rising to the challenge.*"

Canada's 7% of global e-commerce in 1998 represented a total Internet economy of $28.5 billion, and 95,100 jobs. This is predicted to increase to $156 billion by 2003 – an expansion in activity translating into 180,000 new jobs (Boston Consulting Group, 2000). While this is an exceptional rate of growth by conventional standards, it trails the pace of growth in other jurisdictions.

As indicated earlier, Canada is actually lagging its southern neighbour, especially with respect to the extent to which companies are adopting e-commerce as a tool for both B2B and B2C transactions. While Canada has thus far maintained an advantage over other countries, indications are that European countries are now overcoming some of the initial infrastructure barriers and are beginning to advance rapidly and catch up on Canada. The lag in Canadian e-commerce, especially in B2C, is reflected in the observation that "...a whopping 63% of the dollars Canadians spend on-line goes to the United States. The reason we choose U. S. Websites over Canadian is reportedly because of better selection, better price and a greater number of sites." (Cline, B., 1999, pg. 20).

While there is a paucity of data regarding the Atlantic Provinces, available findings paint a picture that holds both encouragement and concern.

On the positive side, connectedness is growing very rapidly. In the first half of 1999, the Canadian Federation of Independent Business (CFIB) carried out a survey of its SME membership base. Its findings, based on over 18,500 responses, indicated that 61% of respondents were connected to the Internet, up from just over 40% two years previously. The number varies according to the size of the business, with larger companies (100 to 499 employees) having 88% connectivity and companies with less than 5 employees having approximately 50% connectivity (CFIB, 1999). Based on this pace of growth, the study forecast that three-quarters of SMEs would be connected by 2000. While all provinces experienced growth, there are significant regional differences. In particular, Quebec lags behind the rest of Canada as it is overcoming an initial shortage of French-language resources. Internet use is strongest in BC, Alberta, Ontario, Nova Scotia and PEI, where

about two-thirds of SME owners are connected. Firms in Manitoba, New Brunswick and Newfoundland are close to the 61 per cent national average.

The study also found that approximately 18% of Canadian SMEs have websites. Websites were most common among Ontario firms (23%), followed by Alberta, BC and Nova Scotia businesses, each at around 17 to 20%. While Nova Scotia was close to the Canadian average, the other three Atlantic provinces lagged badly behind, at 12% for New Brunswick, 9% for Newfoundland and 6% for Prince Edward Island. This suggests that while the Atlantic Region compares well with the rest of the country in connectedness, it is trailing significantly in terms its SMEs' Web presence and the active use of the Internet. (It should be noted that the CFIB survey does not provide the detail to comment on the nature or quality of the websites of the SMEs, to what purpose these websites are being used or their effectiveness.)

The CFIB study also provides useful insights into the sources that companies use to develop an understanding of how to conduct business electronically:

- 58% use the knowledge of staff and associates;
- 40% use the Internet to seek advice;
- 35% use consultants; and
- 11% use government sources (CFIB,1999).

Some data are available on the state of e-commerce in Atlantic Canada, although this data may not be reliable or current, mainly because of the circumstances or strictures in place when the data was collected. The Electronic Commerce Centre conducted a survey of SMEs in five major population centres in New Brunswick. This survey indicated a relatively high level of PC use in the 36 companies surveyed. Over 50% of these companies used the Internet, and over 20% reported having a website. This is consistent with the findings from the CFIB study, except that the percentage of companies reporting a website is higher, perhaps reflecting the way in which the

companies were chosen for each survey. Notably, the Electronic Commerce Centre study also found that almost half of the companies without a website were considering building one in the near future, and over half of those with a website were planning to expand its functionality.

Further insights into the status of e-commerce in Atlantic Canada can be gained from a series of four information workshops mounted by ACOA in St. John's, Clarenville and Stephenville, Newfoundland and Baddeck, Nova Scotia. These workshops were well attended (417 participants), and a total of 220 of these participants completed an exit survey. The results must be viewed in the light of the type of participants (small business owners with enough interest to attend a workshop), but nevertheless do provide some useful findings. Of those completing the survey, 55% were SMEs, mainly in the service sector. Over 90% of respondents were connected to the Internet, with 31% indicating internal e-mail use, 19% indicating external e-mail use connecting with suppliers and customers, and 18% indicating use of a website to promote a product or service. Of the respondents, 5% had websites with online ordering/payment options and 2% were linked to suppliers and customers through some form of Extranet.

A recent study of business-to-business e-commerce in Newfoundland for Operation ONLINE, indicated that there was little B2B activity amongst SMEs in the province. This study was based on a "traditional" definition of B2B that required the company to be a part of a formal value chain in order to be considered.

Overall, the data that is available on Atlantic Canada suggests that Atlantic Canada is trailing the rest of Canada in adopting e-commerce. Also, this lag is not distributed evenly across the four provinces. Therefore, there is a real danger that Atlantic Canada, and particularly some regions within Atlantic Canada, may be left too far behind to catch up and derive any advantage from e-commerce. It will be important in the next few months to closely monitor new indicators to determine whether this disturbing hypothesis holds true. One important indicator will be the release in the spring of 2000 of Statistics Canada's current survey of approximately 27,000 companies across Canada ("Survey of Information and Communications Technologies and Electronic Commerce"). This survey sample is large enough to provide an accurate, statistically valid and

reliable picture of where each province stands with respect to e-commerce adoption. Further, this survey will be repeated in future years, building a comprehensive picture of how Canada and the provinces are progressing to meet the objective of the Government of Canada, as stated in the Canadian Electronic Commerce Strategy (Government of Canada, 1998) to "..become a world leader in the development and use of electronic commerce by the year 2000."

The remainder of this report is focused on examining the present status of e-commerce in Atlantic Canada from the perspective of SMEs, how e-commerce is currently being supported and what actions can be taken to ensure that e-commerce plays its part in stimulating economic growth in the region.

2.0 E-commerce in Atlantic Canada

This section examines the various facets that constitute or support e-commerce as it presently exists in Atlantic Canada. As has been indicated in the previous section, e-commerce is growing in the region, but still lags behind the rest of Canada. It is recognized that Atlantic Canada is a diverse region consisting of four provinces, each of which may be developing its information technology sector, connectivity and e-commerce presence in different ways. An examination of the state of e-commerce in the region must consider those aspects of e-commerce that are common to the region and those aspects that are unique to one or more provinces. E-commerce activity in a region is dependent not only upon those companies that are adopting this emerging form of business, but also upon an infrastructure to support electronic communications, train skilled workers to work with e-commerce and develop companies that can provide the set up and support for e-commerce adopters. These needs are examined in this section.

In examining how companies use e-commerce, it is recognized that individual companies will use e-commerce in different ways, depending upon their individual needs, level of comfort with the process and level of commitment. Reference has already been made to B2B and B2C. While there are distinct differences between these two functions, it is possible for some blurring to take place between the two (the models are not always adhered to exactly). In the same way, the level of commitment can proceed through various stages. For example, the Government of Canada brochure "Beyond the Website". distinguishes 5 stages of connectivity for a company using e-commerce.

- Stage 1. **Communicating** using e-mail and access to the Internet;
- Stage 2. **Promoting** by creating a website for the company to provide information on the Internet about the company;
- Stage 3. **Linking Internally** by using an Intranet to promote communication within a company;

- Stage 4. **Linking Externally** with suppliers and customers (Extranet) to co-ordinate supply chains; and

- Stage 5. **Creating New business Models** by sharing resources with new partners to create virtual global enterprises.

At the outset of this study, it was determined that four levels of activity of particular relevance to B2C could be used to determine the commitment of SMEs to e-commerce. These four levels are:

- Level 1. SMEs with the basic online capabilities (Internet connection plus e-mail);

- Level 2. SMEs with a website but no advanced capabilities;

- Level 3. SMEs able to take orders and provide customer service through the Internet;

- Level 4. SMEs complete transactions and receive payment through the Internet.

These four levels are not consistent with the grading used in the "Beyond the Website" brochure. Both schemes are useful guides to determine the extent of a company's e-commerce activity, and by extrapolation from a survey of a number of SMEs, the e-commerce activity of Atlantic Canada.

2.1 Key E-commerce Players in Atlantic Canada

It is probable that for e-commerce to become deeply established in the regional economy, an array of public and private actors and educational and scientific institutions must actively promote and diffuse technologies and business models. An initial view of e-commerce in Atlantic Canada shows a wide variety of scattered activities, some of them very promising, but *no strong championship from the public or private sector.*

However, some government programs and support services are beginning to move e-commerce ahead in the region. Some programs are available to build awareness or provide incentives to companies to move towards e-commerce adoption. Nevertheless, *the absence to date of*

champions for e-commerce in the region may be a contributory cause to the lag that Atlantic Canada is experiencing at present.

Within the federal government, Industry Canada has established the Task Force on Electronic Commerce. This Task Force has produced a Canadian Electronic Commerce Strategy which is serving as valuable guide for progress in vital areas such as security and encryption, privacy, consumer protection, legal and commercial frameworks, taxation, intellectual property, connectivity and skills and awareness. The Task Force is concerned with national policy issues and therefore has not addressed specific e-commerce issues in the country's regions.

In Atlantic Canada, Industry Canada has begun to address e-commerce through programming designed to move the region forward to a position of leadership. Industry Canada has begun to assemble information on the current status of e-commerce in the region, focusing on both suppliers of e-commerce services and-e-commerce users. It has assembled case studies of companies in the region that are active e-commerce practitioners. Industry Canada is working to raise awareness of e-commerce, especially amongst the companies that could most benefit by deploying some form of e-commerce. It has undertaken several initiatives designed to encourage innovation in the region. These include supporting academic programs and university researchers with interests in e-commerce and its applications, and organizing conferences and fora to encourage the exchange of information. It is also working with training organizations in the region to build the skills and knowledge to facilitate the expansion and application of e-commerce. Most of these efforts have only begun during the current fiscal year so that the impact of the programming is not yet being realized throughout the region.

ACOA organized an initial set of workshops on e-commerce in Newfoundland and Nova Scotia. These workshops, held in 1999, were designed for SMEs and attracted considerable interest with their format that mixed nationally recognized expertise with local examples of firms that are involved with e-commerce. The workshops created a great deal of interest, stimulating discussion in the centres in which they were held.

The Federal Business Development Bank has loan programs that assist SMEs in their

development. Recently it has added "*techno.net*" to its suite of programs. This is a loan program designed specifically to assist SMEs adopt e-commerce to establish a lead position for themselves in the sector. It will allow companies to cover the costs of implementing a Web presence without delay or placing strains on current operations.

The Community Access Program (CAP) is a federal government initiative administered by Industry Canada. It provides support for public computer access to the Information Highway via the Internet at the local community level. The overall objective is to provide all Canadians with affordable, convenient access to the global knowledge-based economy and the opportunity to use its technologies. In collaboration with provincial, territorial and municipal governments, the private sector and not-for-profit organizations, CAP will help establish up to 10 000 public Internet access sites in rural, remote and urban communities across Canada by March 31, 2001.

Among the four provinces, there has been some activity to encourage e-commerce, but in general this has been neither consistent across the region, nor in its applicability to all sectors. In terms of adaptation of provincial government programming to encourage or enhance e-commerce activity, there are few examples to date. Nova Scotia appears to have little direct programming to encourage e-commerce. There is an awareness of e-commerce within government and its officials are following its progress, but there does not appear to be any concerted effort to intervene at this stage to encourage more companies to become involved. The most active group encouraging e-commerce activity in Nova Scotia is NovaKnowledge, a grass roots IT promotion association, based in Halifax. This organization has been conducting workshops on e-commerce as a part of the Knowledge Economy Summits held twice yearly in the province. These workshops have served to raise awareness within the SME community in Nova Scotia.

Connections Nova Scotia is a joint effort of Nova Scotia's Department of Economic Development and Maritime Telephone and Telecommunications. It is a business development agency, created to assist telecommunications-intensive businesses (call centres, technical help desks, remote maintenance) to expand in Nova Scotia. The Technology Advisory Group (TAG) of Cape Breton provides guidance to technology, business and education communities to help develop a

knowledge-based economy on Cape Breton Island. The Telecom Applications Research Alliance (TARA) promotes applied R&D in the field of telecommunications. Selected projects are supported by approximately $3.7 Million in project funding. TARA actively solicits project ideas in areas such as interactive entertainment, tele-health, distance learning and e-commerce.

In 1998 Dalhousie University established a Master's in Electronic Commerce (MEC) program, based in its faculty of computer science and involving the faculties of law and management. MEC is a two year program with a research component and a work internship. The program has three streams - technology, policy and business. In 1999 Dalhousie University led a bid to establish a Network of Centres of Excellence that would have involved researchers across Canada. While the proposal was not successful, it is hoped that there will be a further attempt to create this entity. Dalhousie has continued to show leadership in e-commerce by recently hosting a national meeting to identify a research agenda for e-commerce.

New Brunswick showed early leadership in the IT sector, promoting IT and the Information Highway in the 1980's. While New Brunswick does not have any specific policies or programs for e-commerce, there are several government initiatives that provide indirect support for e-commerce activity. These include:

- the Community Access Program;
- NBINet, which covers some of the costs of developing broadband applications;
- major plans for electronic service delivery through Service New Brunswick;
- deployment of public key infrastructure (PKI) capability within the provincial government;
- promotion of exports of various specialized segments of the IT industry, such as interactive training software.

Since 1996, the Faculty of Business at the University of New Brunswick in Saint John (UNBSJ) has offered an undergraduate certificate and an undergraduate major in e-commerce. This was the

first undergraduate business e-commerce degree program in Canada and one of the first in the world. In 1999 UNBSJ began to offer an MBA concentration in e-commerce. This program is already heavily subscribed with more than 30 full-time students.

The Electronic Commerce Centre is a collaborative undertaking of UNBSJ and six sponsors: NBTel (Aliant), Nortel, Sun, DMR, Scotiabank and the Government of New Brunswick. It is a university-industry collaborative research and outreach venture that focuses exclusively on e-commerce and is unique in Canada. The Centre has undertaken a series of surveys on uptake of e-commerce by SMEs in New Brunswick. It has sponsored the First International Electronic Commerce Case Study Competition for Graduate Students and has hosted several conferences and business events related to e-commerce. The Centre has launched an e-commerce research program focused on SMEs, customer relationship management in interactive environments and "home-centric" e-commerce (B2C delivered in a home setting).

Prince Edward Island has two agencies with a role in fostering e-commerce. Technology PEI, an agency under the Department of Technology and Environment, has a mandate to foster growth of the IT sector in PEI. Accordingly, it does not have any programming that directly encourages or supports e-commerce in non-IT firms. It is working, however, to create a favorable climate and infrastructure for e-commerce. In partnership with the Information Technologies Association of PEI, it has undertaken a policy development initiative that examined issues such as knowledge workers, development, marketing and procurement. The primary focus of the exercise was on building the export presence of the IT sector through strategic partnerships and creating a local critical mass in both the business and institutional sectors. While the emphasis of the findings was on IT, the work also addressed other issues such as those areas that may be most amenable to e-commerce, including PEI branded gourmet foods, distance learning and tourism. The study called for the development of an "IT Business Development Centre" that would have an e-commerce focus on exploring opportunities around website development, e-commerce and innovation. The Centre could "facilitate the clustering of small IT firms to take advantage of great e-commerce ideas and convert them into commercial opportunities."

PEI Business Development Inc. is responsible for encouraging the establishment and expansion of businesses in PEI, with emphasis on export-oriented businesses. Its small business support program will provide 25% of the cost of an e-commerce initiative, to a maximum of $10,000. A stipulation is that the e-commerce initiative must be used primarily to address export markets.

Holland College has also been moving to address learning needs related to e-commerce. With support from the PEI Knowledge Economy Partnership, the college has developed a 26-week certificate course in e-commerce for on-line delivery. The course addresses both B2B and B2C, and is made up of twelve modules which emphasize the business implications and aspects of e-commerce, including marketing, inventory, accounting, and customer service. The course is aimed at a core target market of SMEs, initially in PEI starting in May 2000, and then, as the product is refined, the Maritimes. Learners can opt to take the full course, or individual modules. The program is expected to have a strong market niche in terms of both its curriculum and its online delivery format. The College is currently exploring the scope for government assistance to businesspeople wishing to take the course.

More generally, PEI has placed strong emphasis on promoting connectivity and e-enabling the public at large. Its small geographic scale has assisted in achieving these goals. Initiatives include the following:

- Provincial and federal governments have supported Island Telecom's initiative to build a high-speed broadband digital infrastructure across PEI.
- PEI pioneered the concept of Level 2 CAP sites, which are incorporated as businesses with a mandate to promote e-commerce in their regions and to provide resources and mentoring to the Level 1 CAP sites in their regions. In the Evangeline region of PEI in particular, these efforts have given rise to a number of IT businesses.
- In the fall of 1999, the Minister of Technology and Environment committed to a goal of comprehensive electronic service delivery in two years.

The Government of Newfoundland and Labrador does not have any direct programming to encourage or support e-commerce. Much of its efforts to promote and develop its IT sector has been undertaken by Operation ONLINE Inc., a not-for-profit corporation set up to advance and promote the province's IT sector. In 1999 the Department of Development and Rural Renewal commissioned a study of e-commerce usage by small manufacturing companies, focusing on B2B activity. The study revealed that there was little e-commerce activity in this area and concluded that there were few companies that were active participants in the supply chains needed to support this type of activity. It also commented on the general lack of understanding of e-commerce amongst small manufacturers and the need to initiate awareness programs. This observation is borne out by the response to the workshops that ACOA held in the region during 1999 (see Section 1.3).

Subsequently, Operation ONLINE, together with the Avalon Development Alliance, has launched an E-commerce Pilot Project. The goal of the project is to implement e-commerce technologies and design best practices models for selected small and medium-sized businesses on the Avalon Peninsula. The resulting models will be used to encourage e-commerce adoption in SMEs throughout the province. 34 companies have been selected for the pilot project.

Within government there is an effort under way to assess the e-commerce possibilities that exist for conducting government business with the public over the Internet. A first step has been taken with the transfer of all government tende and requests for proposals being handled through the MERX online procurement system.

Memorial University of Newfoundland (MUN) does not have any specific e-commerce programs although e-commerce is being taught as a part of marketing courses within the commerce programs. The P. J. Gardiner Small Business Institute, attached to the faculty of Business, does offer e-commerce marketing advice and training to SMEs in response to requests. The P. J. Gardiner Institute also works with the Industrial Research Assistance Program (IRAP) of the NRC Canada to help companies that require technical assistance including setting up in e-commerce. There is also an initiative to establish e-commerce programming within the College of the North

Atlantic (CONA) as a part of the Distributed Learning Centre that has recently been set up out of CONA's Clarenville campus.

There are other university, public college and private college programs that cover some aspect or other of e-commerce. These usually either touch on marketing (university courses) or website technology (public and private colleges). There are few programs that cover all the facets needed to become proficient at e-commerce. This situation is changing as colleges realize that their graduates require a comprehensive understanding of e-commerce. An example of this is the program being offered in St. John's, Newfoundland by Systems 'n Solutions Ltd. which has a program that provides students with a full range of technical, business and marketing skills so that they are prepared to handle all the issues that they will face in the e-commerce world.

All four provinces have industry associations that focus on either IT or technology. In all cases these associations are working with their memberships to raise the understanding of the role of IT and to encourage technology-based companies to explore the possibilities presented by e-commerce. However, there are no specific programs being presented or developed by these organizations at this stage that are aimed at raising overall awareness. In general, the issue of awareness amongst SMEs in the region is a major one that seems to have received very little attention to date.

There are other organizations that are endeavouring to raise awareness of the IT sector and e-commerce in Atlantic Canada. One such organization is the Atlantic Provinces Economic Council (APEC), an independent, non-partisan research and educational institution. APEC is a federally incorporated, non-profit organization primarily financed by membership contributions and funded research. Its objective is to promote the economic development of the Atlantic Region of Canada. It accomplishes this through analysing current and emerging economic trends and policies; by communicating the results of its analysis and consulting with a wide audience; and by advocating the appropriate public and private sector response. The most relevant recent publication by APEC is "IT and the Knowledge Economy in Atlantic Canada".

2.2 E-commerce Product and Service Suppliers in Atlantic Canada

E-commerce product and service suppliers include all those companies that provide some form of assistance to organizations that are either starting to become involved in e-commerce or are already active in e-commerce. The suppliers may provide website design and development services, web hosting, software (or hardware) to companies setting up their own websites, transaction capabilities and security services. This report mainly focuses on those suppliers who offer clients a comprehensive range of services and products.

The e-commerce supplier sector in Atlantic Canada has recently gone through considerable change. In the recent past, setting up a website was considered a major step for a company establishing an e-commerce presence. As the basic software and services for setting up a simple website became readily available, many small companies and free-lancing individuals have entered the website design and hosting business, offering services to clients at relatively low cost. A positive feature of this development is the availability of affordable entry-level web design and hosting services. A less positive outcome is that many companies have a simple website but little else. There has been little emphasis on maintenance, or on creating new content or linkages to ensure that the website is an effective tool or expanding to include capabilities to handle transactions electronically. In the past year or two the market for website services has matured and a number of small companies that originally offered website design or hosting services have either disappeared or upgraded their services. The resulting supplier companies, or new companies that are being formed have become more sophisticated and can provide website development, hosting, transaction capabilities, content development and strategic marketing services.

This is a natural transformation of the industry, occurring in Atlantic Canada and wherever e-commerce is emerging as an economic force. While many small firms originally believed that a website could be created at little cost, this attitude is changing as companies realize the importance of issues such as presentation, regular maintenance and upgrading of content and the need to properly market and index the site in order to generate traffic and reach the site's intended

audience. Until recently small website development companies have existed by creating websites for SMEs , but the sector now appears to be undergoing a shakeout since the number of entry-level web service providers has proliferated, squeezing the revenues and margins of established service providers. Many small suppliers, mainly focused on web design, have fallen by the wayside. *All provinces now have a core of more sophisticated suppliers, capable of providing an extensive range of quality services*, as well as a number of very small web design companies, often operated by individuals on a part time basis or linked to other web businesses such as regional or sectoral portals.

At the same time, e-commerce suppliers are realizing that this is a global market, with competition coming in from elsewhere to capture portions of the local market, and opportunities for local suppliers to compete beyond Atlantic Canada. The latter is a driver for change as some Atlantic Canadian e-commerce suppliers begin to experience success in other regions of Canada as well as the United States.

Who are the players that are emerging as the key e-commerce suppliers in Atlantic Canada? A few suppliers are associated with large national or international companies, some of whom have been in the region for a long time. These companies can call on the experience of their national or international organization to provide assistance where necessary and also maintain currency in a rapidly changing field as a result of the breadth of their base. These suppliers tend to focus on the high end of the market, unlike the small companies starting out as e-commerce suppliers. Also, a number of IT companies have developed capability as an e-commerce supplier as part of their expertise in IT. Recently, Aliant has entered the arena as a value adding player in all four Atlantic provinces, providing hosting and transaction services in cyber-malls, where companies can establish sites to sell their products and the "mall" handles all the transactions for a fee. This concept is relatively new in the region although it has been successful elsewhere.

An important part of this study was a review of the e-commerce supplier situation in Atlantic Canada. By contacting several key suppliers in each of the four provinces, we have verified that the capacity exists to handle the present needs of any company wishing to adopt e-commerce as

a part of their company's operations. The available services extend beyond the technology to include market evaluations, training of personnel to handle e-commerce and strategic marketing and positioning of websites for maximum effectiveness. Several suppliers also provide service for both B2C and B2B e-commerce. One issue, about which some uncertainty exists regarding the adequacy of services in the region, is banking and payment processing services. This issue is discussed in the next section of this report.

Presently the availability of e-commerce suppliers in the region appears to be meeting the demand. The focus of many suppliers is on the technological aspects of e-commerce enablement and there is less emphasis on the business aspects of e-commerce. Issues such as developing new business models to take advantage of new opportunities presented by e-commerce, or how Internet marketing may vary from traditional marketing techniques do not receive the same emphasis as website development, hosting or transaction capabilities. In at least one case a supplier indicated that they bring in a business consultant to handle the business development aspects of e-commerce when clients need this guidance. Other companies are building capacity in management issues. As with other aspects of e-commerce, demand does not always exist for these functions, because the client company has not understood all the implications of e-commerce.

E-commerce suppliers that were interviewed for this study were also asked to comment on the barriers confronting companies wishing to start using the Internet. While the responses are varied, reflecting to some extent the biases of the suppliers and their clientele, some common themes emerge and these are noted here. *The one overriding theme is the lack of e-commerce awareness among SMEs in the region.* Several suppliers commented that the media and governments have raised the profile of e-commerce with the result that companies are concerned that they are not participating, but there has been little done to educate these companies as to what it is that they should do, how e-commerce could affect their business, the way it operates, how to manage the changes that may occur and what the realistic associated costs might be. As a result, *many companies are not sure of what they are getting into, and are surprised at the start up and maintenance costs.* Consequently, these companies look around for a cheap entry level solution,

do not provide for the requisite website maintenance and end up disappointed with the results.

Many suppliers have set out to provide a sophisticated product to the market anticipating that the growing importance of e-commerce would encourage companies to seek sophisticated solutions for their entry into e-commerce. One supplier, having developed a partnership with a company providing a secure, realtime credit card processing system on the Internet, found that there was no demand for this product. The supplier concluded that most companies would be satisfied with the business that was initiated on the Internet but handled by traditional methods such as phone or fax. In another case, sophisticated software was obtained to provide a high end website hosting and transaction-processing solution for clients, but it was found that very few clients either wanted that level of sophistication or were prepared to pay the costs of a high end solution. This supplier subsequently simplified its software, providing a less expensive solution.

Suppliers indicate that cost is a major issue in dealing with new clients. Many client companies, want to develop an Internet presence and proceed to e-commerce, but they do not understand the costs of doing this. *There is a perception among many SMEs that doing business on the Internet should be inexpensive.* As a result companies either decide not to continue or else seek an inexpensive solution. In some cases the inexpensive solution may be satisfactory, but often it does not meet the real needs of the company, does not receive the amount of promotion required, and thus does not bring in any additional business. The firm then becomes disillusioned and reverts to its normal business practices. Many SMEs seem to misunderstand the cost/benefit ratio of the Internet. Their psychological threshold for website costs is in the order of $1,000 to $2,000, while it often costs this much just to advertise in a local business directory. The Internet can offer a company an outreach to global markets and this should be worth considerably more. Yet many companies are reluctant to commit larger amounts to market globally.

The message from suppliers is that their clients need more knowledge of the costs associated with e-commerce so that they can understand what is needed to achieve the best results. In some cases the company may not have sufficient capacity to generate a reasonable return on the investment in e-commerce and therefore should not proceed, or may want to limit its exposure to

a website initially until it has had an opportunity to explore the possibilities more thoroughly.

Companies establishing a website often do not consider the need for ongoing maintenance of the site. They tend to approach a website as if it were a publication in the Yellow Pages, namely, once it is published, it does not need to be changed. An effective website requires constant maintenance and review so that its content is current and its linkages are effective. A poorly maintained website, that is not current, can leave a worse impression on a prospective customer than having no website at all.

Another, related issue is the need for companies to understand the changes that are required to their business system in order to become e-commerce enabled. Many companies do not realize that e-commerce requires different approaches to doing business and are not ready to make the changes before they start the process. Customers on the Internet often require a different level of service and a company that is accustomed to dealing with its clients on a face to face basis can encounter difficulties when faced with a spate of online orders or enquiries regarding delivery delays. Issues such as 24x7 service, order fulfillment, foreign sales and foreign exchange all become issues that a company may not have previously faced. One supplier stated that companies that were already in the mail order business adapted relatively easily, while traditional "bricks and mortar" companies serving local markets may lose their way early in the process, if they have not done sufficient preparation before starting.

2.3 E-commerce and Banking

In discussions with e-commerce suppliers and users, the issue of banking emerged as a poorly understood issue. Potential e-commerce users perceive two barriers, namely transaction security and the reported difficulty in obtaining merchant accounts or other online payment facilities. The following is a brief summary of the situation, based on discussions with various stakeholders, including banks, in Atlantic Canada. No effort has been made here to determine whether this issue has a national dimension, other than a brief contact with the Electronic Commerce Task Force, which did not consider it a major national concern.

Security has been an ongoing concern for e-commerce. There is a perception that the Internet is subject to violation by hackers who can access a website and obtain details of credit cards etc. leading to subsequent fraudulent use. As recently as February 2000, hackers illegally denied access to several key commercial sites in the United States. This incident is still under investigation, but helps to foster the perception of lower security for Internet transactions. The Industry Canada Electronic Commerce Task Force has spent considerable effort on the problem of security, dealing with issues of encryption, legal issues surrounding Internet transactions and fraud. It is important that these issues be resolved so that Internet transactions proceed safely with the full protection of the law. It is equally important that this be communicated to the public so that their perceptions of safe transactions reflect the reality that is being created by government, the banks, the Internet industry and other concerned parties.

The second issue for companies wishing to become e-commerce enabled is the issue of obtaining facilities for online payment processing. The perception exists that it is difficult and expensive to set up the necessary accounts to process credit card payments over the Internet. This is in part due to the Canadian banking regulation that disallows duality. Banks are not permitted to carry more than one credit card, so that a company wishing to accept more than one credit card (i.e. Visa and Mastercard) has to deal with more than one bank. In reality this is no more onerous than a merchant setting up a credit card account with a bank to conduct business in a store that accepts credit cards. The problem appears to arise when the banks assess the risk associated with an Internet account. Internet-based businesses are generally considered by the banks to be higher risk propositions than their brick and mortar counterparts. The latter generally have a prior credit history and collateral, while the former are generally new firms with mainly intangible assets. As a result, their applications take longer to process and are often assessed higher security deposits. The perception among the e-commerce business community is that banks do not understand the requirements of e-commerce and may deem e-commerce companies to represent unreasonably high risk.

There is no direct evidence that the above picture is accurate, but it is an issue that has been raised by several e-commerce suppliers and users in Atlantic Canada. It is true that banks

consider online businesses to be riskier than bricks and mortar businesses, especially when the former have little or no collateral or do not have a prior credit history with the bank. Banks require a percentage of turnover as a bond for online merchant accounts, similar to their requirement for bricks and mortar merchant accounts. The accounts typically take major credit cards, which are cleared through the same clearing houses. The banks feel that the problem arises from e-commerce start ups that have no merchant accounts. These companies have often not established a relationship with a bank and do not understand what is involved in getting a merchant account.

The banks see the major barrier to e-commerce enablement of firms not in the availability of online payment facilities, but the absence of arrangements for digital signatures, which are not yet recognized by law in Canada, except in Saskatchewan. Digital signatures are recognized in every state in the United States. Legally recognized digital signatures are a form of evidence that makes it easier to determine liability in cases of disputed transactions. Without clear cut evidence regarding payment authorization, online transactions represent a somewhat higher degree of risk than traditional forms of transaction. According to the banks, this higher risk translates into higher costs of online payment services.

It appears that there is a need to examine this issue more closely, both in terms of its implications for e-commerce start ups and as its relates to Atlantic Canada compared to the rest of Canada. *A move to encourage a more open dialogue between banks, e-commerce suppliers and companies using e-commerce would be a useful first step.* In the meantime, there is evidence that some companies in Atlantic Canada are simply moving the transaction aspect of their Internet business south of the border where they are encountering fewer problems. At least one company (see the Case Study relating to Innova Multimedia) has indicated that they are actively pursued for this business, on a regular basis, by American companies offering these services.

Overall it would seem that while issues related to banking and the establishment of merchant accounts is seen by some as a potential barrier, this barrier is not insurmountable, is unlikely to be restraining growth and efforts are underway to reduce any constraints that may be present.

3.0 Survey of E-commerce Use by SMEs in Atlantic Canada

The focus of this study is on SMEs that fall under ACOA's jurisdiction concerning support for economic development, i.e. small manufacturers and other companies that produce their own products and services. The retail sector is not considered in this study. This places emphasis on companies who in general have a "value-added" activity, and particularly on small and medium-sized manufacturing and processing enterprises. In order to determine the role that e-commerce may be playing in the activities of these companies, a survey was carried out of SMEs in each province. The survey was administered to a total of nearly 200 companies, first by e-mail and then by a telephone follow-up to those that had not responded. As a result 138 responses were received, for a response rate of 70%.

Before presenting the results of the survey several of its features should be noted. The survey was not conducted on a random sample of SMEs from each province. As indicated earlier in this report (see Section 2.0), four levels of Internet activity are considered, from basic e-mail and web browsing to full online transaction capabilities. For the purposes of this survey, it was decided to select only those companies who as a minimum had an Internet connection and a website (level 2), and to make an effort to identify companies with Level 3 (interactivity) and Level 4 (on-line transactions). Thus, the survey sets out to examine the subset of all the SMEs in Atlantic Canada that are engaged in value-added activities and e-commerce.

Originally a third distinction was made, namely that up to ten SMEs engaged in B2B would be included from each province. This was to be done by contacting key companies that were likely to have extensive supply chains using EDI or later versions of B2B technologies. This exercise indicated that few Atlantic Canada-based supply chains are moving vigorously in the direction of B2B. Grocery chains (which fall outside the scope of this study) are using EDI with many of their suppliers, but it should be noted that many of the smaller suppliers in the region often choose to use a "gateway services provider" who will conduct all the EDI transactions on their behalf. Other companies, such as the large offshore oil companies, do have extensive supply chains, but have not as yet moved to using B2B as a tool for these chains.

Thus, it was not possible to include companies who were engaged extensively in B2B. However, this search did reveal a growing amount of informal interaction between SMEs in the region, who are beginning to exchange information ranging from product holdings to engineering information and drawings to purchase orders and invoices over the Internet. There are also companies in the region who are developing software to support these activities. Wherever possible these companies are included in the survey, but no distinction is made between B2B and B2C.

The questionnaire for the survey is attached to this report (see Appendix A). The questionnaire measures the level of connectivity of the company, its use of Intranets and Extranets, how it established and maintains its website, its expectations of the Internet and whether these have been met. The results of the survey are summarized in the next section of this report.

3.1 E-commerce Survey Results

In all, 138 SMEs responded to the survey out of 196 contacted, for a response rate of 70%. Exactly half responded by e-mail and half by telephone interview. The breakdown of responses from each of the four provinces is provided in Table 1. The response rate from each province is sufficient to allow some distinction to be made among the four provinces regarding e-commerce use by SMEs.

SMEs were also categorized by their activity. Some companies indicated more than one activity, such as a manufacturer that also retails its products. The categories used were retail, manufacturing, service, research and development, construction and IT and communications. The results are summarized in Table 2.

Table 1. Survey Responses by Province

Province	No. Of SMEs Contacted	No. Completed Surveys	% of Completed Surveys	% of Total Surveys Completed
New Brunswick	51	32	63%	23%
Newfoundland	56	45	80%	33%
Nova Scotia	54	37	69%	27%
Prince Edward Island	35	24	68%	17%
Total	196	138	70%	100%

Table 2. Summary of SMEs categorized by Activity.

Province	Retail*	Manufacturing	Service	R & D	Construct	IT/Com.
New Brunswick	1	15	13	0	2	4
Newfoundland	2	31	8	5	0	6
Nova Scotia	5	16	11	1	0	6
Prince Edward Is.	5	20	4	0	1	1
Atlantic Canada	13	82	36	6	3	17

* Retail refers to SMEs that have a retail activity as a part of their operations.

The majority of companies in the survey are manufacturers, with services constituting the next largest group and the remaining activities such as research and development and IT/communications making up a small minority of the companies. The distribution by province of companies performing manufacturing does nct introduce any significant bias into the results.

Given the prerequisite that companies selected for the survey should have a website, it is not surprising that the survey indicates that all companies surveyed use the Internet to visit other websites and send e-mail. Four companies indicated that they have discontinued their website.

Caution is necessary in interpreting the data from the questions on Intranet, Extranet and B2C and B2B usage, as some companies do not fully comprehend what these terms signify and, for example, consider Internet banking to imply B2B. Care was exercised to flag as many of these responses as possible. As well, the number of companies involved in Extranets was not consistent with the number of companies indicating they were engaged in B2B, underlining the need to approach these findings with caution. Table 3 illustrates the break out of the data for responses to the questions on Internet usage.

Table 3. Percentage Internet Usage by Survey Respondents

	E-mail	Surfing	Website	Intranet	Extranet	B2C	B2B
New Brunswick	100	100	97	38	22	16	31
Newfoundland	100	100	98	36	36	7	13
Nova Scotia	97	100	95	68	59	30	35
Pr. Edward Is.	100	100	100	33	17	29	25
Atlantic Canada	99	100	97	44	36	19	22

Table 3 indicates that while the companies selected for this survey are using the Internet for the basic communications functions (e-mail, browsing and displaying their own website) the number of companies that have proceeded beyond this point is small. Intranet usage implies that a company is using web technologies for purposes of internal communication and coordination. This can be a very productive use of the Internet, especially if the company has more than one location, but it does not imply that the Internet is being used to generate new business for the company. Approximately one quarter or less of the companies surveyed are using some form of commercial activity that conforms to Level 4. As these are the functions that are most readily associated with revenue generating activities on the Internet, it implies that *as yet, the Internet is not playing a major business role amongst SMEs in Atlantic Canada.* Since the survey was restricted to companies with a website, it can be concluded that the percentage of SMEs using the Internet for revenue generating activities is even lower in the general population. Clearer evidence of this will

be available when the data from the Statistics Canada Information and Communications Technologies and Electronic Commerce survey is released later this year.

The survey identified the features of e-commerce that attracted companies to the Internet. Among the features that attract companies, the ability to be accessible to customers continuously (24 hours/ 7 days per week) was considered to be an advantage, along with providing better customer service and the ability to compete successfully with other companies. The One of the least attractive features of e-commerce for these companies was the ability to become a part of an electronic supply chain. The results are summarized in Table 4.

Table 4. Features that Attract Companies to the Internet

Feature	% of Companies
Open 24/7 globally	78%
Offer responsive customer service	74%
Compete successfully with other companies	71%
Target marketing with precision	60%
Gather strategic customer information	55%
Join electronic supply chains	18%
Reduce inventories and cycle times	17%

The response to this question indicates that most companies are concerned about how the Internet will allow them to interface with clients more successfully and thus remain competitive. There is much less concern about issues such as maintaining tighter control of inventories or becoming a part of an electronic supply chain. This finding is consistent with the results summarized in Table 3, which indicate that most companies are maintaining a website, but have not proceeded to transaction-oriented B2B or B2C. *Atlantic Canadian companies are generally not sophisticated users of the Internet for business purposes*, concentrating on the use of their website to present information to customers and using the Internet to maintain e-mail contact with them.

Regarding the barriers that companies had to overcome in order to establish an e-commerce capability, *the most significant factor, cited by almost two-thirds of respondents, was a lack of knowledge about e-commerce.* The cost of developing a website and the lack of qualified staff were regarded as barriers by more than four out of ten responding SMEs. About one-third of SMEs are concerned by the availability of services and the question of return on investment. The implication is that lack of awareness and lack of knowledge are the major barriers preventing Atlantic Canadian companies from establishing an e-commerce presence. This supports the discussion in the previous section suggesting that the supply of e-commerce services is adequate in each province. Table 5 summarizes the results of the survey findings on perceived barriers to e-commerce.

Table 5. Barriers to Establishing an E-commerce Presence

Barrier	% of Companies
Lack of knowledge about e-com	62%
Cost of setting up e-com	48%
Lack of qualified staff	42%
Availability of outside services	35%
Return on investment	35%

The majority of companies surveyed (57%) hired a company or individual to develop their website, while the remainder (43%) developed their own website. Of those who outsourced the development of their website, the majority (90%) expressed satisfaction with the service they had received. Nova Scotia was the only province where more companies developed their own websites (66%) than hired a supplier to develop the website. Once a company has a website, it usually prefers to maintain the site itself. 58% of respondent companies maintain their own site, compared to 43% who outsourced website development. *This finding corroborates comments received during the interviews that site maintenance is regarded as a somewhat negligible expense item by*

neophyte site owners.

A total of 80 companies responded to the question on whether their venture into e-commerce had realized the expected benefits. This represents only 58% of all the responses. It suggests that many companies do not know whether their investment in web capability has had positive quantifiable business results. Table 6 provides a summary of the responses, and indicates that, in keeping with the findings in Table 3 regarding the factors attracting companies to e-commerce, communications with customers is the principal benefit of e-commerce for these companies. Three-quarters of firms had broadened their customer base; two-thirds had achieved improvements to the quality of customer service; and over half had increased their sales, compared to just over one-third of firms who had achieved cost savings.

Table 6. Benefits of E-commerce for SMEs in Atlantic Canada

Activity	% of Companies
Broader customer base	74%
Quality of service provided	64%
Increased sales	56%
Cost savings	36%

The final issue raised in the questionnaire relates to the companies' involvement in supply chains and using Intranets or Extranets. The responses to these questions provide insight into the Internet activities of companies beyond having a website. When a company is a part of an established supply chain, it may already be involved in B2B or become involved in it in the future. Similarly, companies that are using Intranets and Extranets are reaching beyond a simple Internet presence to extend the range of business activities to include their staff and other companies or clients with whom they deal on a regular basis.

While most companies surveyed responded to these questions, only 26% indicated that they are

a part of a supply chain and only 10% indicated that there is any requirement placed upon them to use some form of e-commerce (for example EDI) as a means of executing transactions within the supply chain . Some form of Intranet had been established by 47 companies, and 19 indicated the establishment of an Extranet with other companies to exchange information (note that in some cases a company has begun to use both an Intranet and Extranet). As there is a lack of understanding among respondents about the exact meaning of both Intranets and Extranets, these results should be treated with caution and may over-represent the number of companies performing these activities.

As previously indicated, this survey only includes companies that have already established some form of presence on the Internet. In view of this selective focus, the results of the survey are not encouraging with respect to e-commerce activity in Atlantic Canada. While the survey indicates that companies are establishing a presence on the Internet, not many companies are moving beyond this point. If it is also borne in mind that at the beginning of the survey *it was no easy task, with the noted exception of Nova Scotia, to reach the targeted objective of a list of 60 eligible companies with websites in each province* (40 for Prince Edward Island), then this survey suggests a low level of e-commerce activity among manufacturers and other value-adding companies in the region. This observation, including the comment on how Nova Scotia relates to the other three provinces, is consistent with the CFIB findings reported in Section 1.3 (CFIB, 1999). Table 7 summarizes these findings in terms of level of e-commerce activity, using the definition of e-commerce activity outlined in Section 2.0.

The four levels outlined in Table 7 tend to focus on e-commerce directed at consumers. Many companies, especially those judged to be at Level 3, are also moving beyond a website to include communication with other companies to exchange information electronically that relates to design, co-operation and the exchange of goods and service, but does not include the capability to complete transactions on the Internet.

Table 7 Summary of E-commerce Activity from Survey of Atlantic Canadian SMEs.

E-commerce Activity	% of Companies
Level 1. SMEs with the basic online capabilities (Internet connection plus e-mail);	3%
Level 2. SMEs with a website but no advanced capabilities;	57%
Level 3. SMEs able to take orders and provide customer service through the Internet;	19%
Level 4. SMEs complete transactions and receive payment through the Internet.	21%
May soon adopt e-commerce*	10%

* This represents companies at Level 2 who indicated that they intended to upgrade to full transaction capabilities within the next year.

Of the 29 companies judged to have reached Level 4 on the scale in Table 7, 15 are from Nova Scotia and only two from Newfoundland. Conversely, Newfoundland had the most companies at Level 2 at 28, while Nova Scotia had the least at 15. This, together with the remarks above that there appeared to be more companies in Nova Scotia with websites, suggests that there are differences in the stages of development in e-commerce between the provinces. *Nova Scotia is more advanced than the other Atlantic provinces, while Newfoundland appears to be lagging the other provinces.* New Brunswick and Prince Edward Island are lagging Nova Scotia in the rate of adoption of e-commerce. In all four provinces there are examples of companies that have adopted e-commerce successfully and are benefitting from it. However, there are many more examples of companies that are either not moving forward because they lack the knowledge and confidence to proceed or are disillusioned by their experience to date and are giving up. The survey results indicate the importance of companies being fully aware of the potential and barriers that e-commerce presents so that they can take full advantage and realize the return on their investment that they can realistically expect.

4.0 Case Studies of SMEs Using E-commerce in Atlantic Canada

The previous section, dealing with the results of the survey of Atlantic Canadian SMEs presents a picture that there is little of consequence happening in e-commerce in the region. Nevertheless, there are excellent examples of SMEs that have used e-commerce effectively to enhance their business activities and expand to new markets. Seven companies were selected from the survey and brief case studies have been developed about each one to illustrate how these companies have used their connectivity to enhance their business prospects. In addition, one e-commerce supplier company was chosen since it illustrates how a company can develop an expertise that is marketable outside the region - in this case in the United States.

The companies chosen are from all four provinces and each uses the Internet and e-commerce in different ways to succeed. Some companies are fully enabled (Level 4) and are conducting transactions over the Internet. Others are setting up to do this and the case studies illustrate how they have proceeded. Other companies are using their presence on the Internet to effectively communicate with other companies, exchanging information, designs and engineering details. There are also examples of companies using the Internet as an effective marketing tool for their business - the case studies illustrate how they have accomplished this and how it can be a cost-effective marketing tool. One case study outlines the establishment of a portal site, which is totally dependent upon the Internet and generates its revenue from others using the portal site as a vehicle for advertising to a selected market - rather like an online magazine. Each case study reveals a different usage and level of development. Some companies have sophisticated websites with a high degree of linkage, while others are less sophisticates with fewer linkages. Some companies have developed their own sites while other sites have been developed by e-commerce service suppliers.

The objective of these case studies is to provide others with illustrations of how problems can be resolved and e-commerce can become a powerful tool for enhancing the business capabilities of SMEs in the Atlantic region.

ACOA E-Commerce Case Study # 1. Atlantic Canada Home

http://www.isn.net/~achome/

Charlottetown, PEI

(902) 368-8461

Atlantic Canada Home (ACH) was established in 1997 through an initiative of Atlantic Canadian provincial and federal government agencies to help small and medium sized manufacturers in the region to market products internationally at competitive prices. The firm is a private company owned by its member companies, consisting of a dozen manufacturers and construction service companies, with consolidation facilities in Charlottetown, Prince Edward Island, Canada. Initially established as a non-profit company, ACH moved to a for-profit basis in December 1998. It offers products and services for residential and light commercial building and can supply package housing or sell individual products at factory prices. The firm's primary market has been Japan, where it sells a line of "Anne of Green Gables" homes, but it is now moving to market a diversified line of products and services to developers, builders, and wholesalers worldwide, with customers ranging from Europe, to the United States, South America, and Iceland.

The firm has a straightforward web site under the domain name of its Internet service provider. The site includes a description of the firm, an outline of its licensing agreement regarding "Anne of Green Gables," a catalogue showing four of its models with down-loadable floor plans and detailed drawings, and an online information request form. According to Rob Oakie, President of ACH, the site has resulted in a number of leads, many of them new customers who would not otherwise have become aware of the firm. While the site receives a relatively low level of traffic – several new hits a week – the firm's product line is sufficiently high value that this level is considered worthwhile. ACH is currently working on a couple of projects that were a direct result of the web site. The firm has not yet moved to organize the customer information generated by these inquiries into a database format, although it may do so if traffic increases, in order to enhance its capacity to monitor and analyse the data.

The online information request form includes a number of fields for customer information. Despite this, the firm finds that it is usually necessary to follow up by e-mail on customer information requests, to weed out irrelevant inquiries; more fully assess the customer's needs; and ensure that they respond with the appropriate information. As discussions progress further, communications eventually shift to telephone and fax.

The site was put in place when the company was first established, as part of the overall marketing strategy for the firm approved by ACH's board of directors., which includes representatives from the member firms, and, during its non-profit phase, representatives from ACOA and the New Brunswick government. Support for web site development was provided by ACOA as part of the overall support package for the firm's marketing strategy development and implementation. The first attempt to develop a Web site was

unsatisfactory, and Atlantic Canada Homes shifted to their current Web site developer, who completed the site, hosts it, and maintains it. Maintenance involves regular checks of the site to ensure that all information and links remain current, and addition of new material provided by ACH.

The firm markets the site through all its print materials, advertisements, and promotions. Member companies have their own domestic marketing activities and do not at this time cross-promote ACH or the web site. Internet marketing of the site is the responsibility of the Web site provider, although ACH specified a number of search engines on which they wanted the site registered.

External hosting and management of the site has been satisfactory as an initial approach, eliminating the need for the firm to invest in upgraded technology or enhanced bandwidth, and reducing the demands on in-house staff. In time, however, ACH may move to obtain its own domain name and play a greater direct role in management and maintenance of the site. The firm is aware that this approach would mean an investment in staff training and staff time, although it is unsure of the magnitude of this investment and hence of the net costs. As such, its approach will depend on the role that the Web site plays in its future marketing strategy: if e-commerce moves to a more central, active role, then the firm will take action to exercise greater control over the site's content and operations. Current plans call for further information to be added to the site, and for the site to become multi-lingual, with information in Japanese, German, and Spanish as well as English.

Internally, the firm has not yet moved to an extranet to link its member companies, relying instead on phone and fax. Some of its member firms carry out e-com within their own supply chains, but to a limited extent at this point. ACH anticipates, however, that it will move in the direction of an extranet in time. The firm already carries out business-to-business e-commerce with a number of its customers, largely consisting of e-mail, and exchanges of specifications and drawings. Often, however, ACH has to use fax communications instead to transfer materials, as not all customers are connected to the Internet, and those who are may have incompatible programs and be unable to receive information. "Everyone has a fax, though," says Oakie. Currently, the firm estimates a 80-20 split between phone and fax communications versus Internet-based communications, but anticipates that the Internet share will grow.

Mr. Oakie considers that government can play a useful role in encouraging the growth of e-commerce in the private sector. Among firms not yet engaged in e-commerce, measures to build awareness and understanding of e-commerce and its potential benefits are important. For those firms just getting into e-commerce, government could help by providing objective advice on the pros and cons of various options, particularly with regard to the balance between in-house web site development and maintenance versus reliance on external suppliers. In the end, each firm is unique, and must develop its own business case for e-commerce, to identify the level of investment, strategic approach, and role in its overall marketing mix.

ACOA E-commerce Case Study # 2. J.J. MacKay Canada Limited

http://www.jjmackay.ca

New Glasgow

(902) 752-5124

J.J. MacKay manufactures electronic parking meters and parking meter management systems. Providing high tech solutions to municipalities and private parking lot owners since 1962, J.J. MacKay is one of only three major manufacturers of parking meters worldwide. They employ 50 to 100 people in their manufacturing plant in New Glasgow and sell their products through a network of dealers and sales representatives around the world.

On the 'upstream' side, several of J.J. MacKay's suppliers are equipped for taking online orders for electronic components and other raw materials. On the 'downstream' side J.J. MacKay restricts their activities to providing online product descriptions, although they are planning to allow dealers and other 'friendlies' access to their site to download product literature and technical data - a form of Extranet currently employed by Metocean Data Systems of Dartmouth.

Their web site was developed and is maintained in-house. In addition to the Extranet features mentioned above, future plans include an upgrade to dynamic html, which will allow them to add new features and capabilities not possible with standard html.

Circuitry for their high tech parking meters is designed by Amirix, an electronic design house located in Halifax. Design documentation is regularly exchanged as email attachments between Amirix, J.J. MacKay and suppliers. This is an example of a form of B2B that is easy to implement, and appears to be in widespread use in NS.

One of the creative ways in which J.J. MacKay has used the Internet to reduce costs is in employee recruitment. Rather than spend thousands of dollars on expensive newspaper ads, they use existing recruitment web sites to find candidate new employees.

J.J. MacKay has plans to experiment with using NetMeeting -- free software available from Microsoft -- to conduct business meetings over the Internet.

Their web site is hosted off premises by a local ISP in New Glasgow. They have a 128k leased line connecting their in-house LAN to the ISP.

George MacKay, the President of the company, is keen on using technology to sell technology, so J.J. MacKay's e-commerce initiative has enjoyed support at the highest level within the company. This is a feature commonly cited as a key success factor by e-commerce users.

It is difficult to say how much of their sales revenue is attributable to their web presence, because all of J.J. MacKay's sales come through their dealer network. They do not sell online, as this is not appropriate for their kind of product, but they do advertise around the world – both via the Internet and in print media. They find that virtually all of their new contacts come through the Internet. J.J. MacKay's initial web site efforts were essentially using it as an Internet billboard. In late 1998 they started to become pro-active to draw traffic to their site. They started registering their site with search engines – being careful to take into account the specific characteristics of each search engine. They started using meta tags more strategically - even to the point of paying attention to the sequence in which keywords appear in their meta tags. They also started 'cross-advertising' - promoting their web site in their print media and via email communications.

They also learned the importance of careful design of the human interface. It is crucial that the web site experience be a comfortable and friendly one for visitors if you want them to do business with you rather than simply surf onwards to the next site. Once they started doing these things, J.J. MacKay were amazed at the high volume of traffic on their site.

Indeed, one of J.J. MacKay's biggest problems in their web experience has been dealing with the large volume of traffic suddenly coming from places where they had never done business before. The kind of problem one likes to have, but a problem nevertheless in figuring out how to do business with new cultures and how to provide customer support in places where they had no established dealers. This is perhaps the most important message to prospective e-commerce companies: "Be prepared to provide the additional customer service that may suddenly be required when your web presence starts delivering results".

One geographic area that particularly caught J.J. MacKay by surprise is China, where recent liberalization of communications restrictions is rapidly bringing 1 billion new pairs of eyes onto the Internet.

ACOA E-commerce Case Study # 3. Oven Head Salmon Smokers

http://town.townsearch.com/ovenhead/

St George, NB.

(506) 755-2507

Oven Head Salmon Smokers is a small, family owned business located near Saint George. It is owned by Joseph and Debbie Thorne and has been in operation for fourteen years. Its products are cold-smoked salmon filets, pate, and jerky. Oven Head Salmon Smokers employs four persons full time and hires extra help during the summer and at Christmastime. Oven Head Salmon Smokers has a large mail-order business. It ships products all over the world, including Europe and Asia, by UPS, Federal Express, or Air Canada. It uses specially prepared shipping boxes containing ice packs to ensure freshness.

Two years ago, the company decided to hire a designer to prepare a web page, which is hosted on a site provided by a local Internet service provider. The web page has pictures of the salmon that are smoked, the smoking process, and the finished products. It provides information about prices of Oven Head Smokers' products as well as information about where the company is located. Furthermore, the website provides the company's e-mail address. The result of the website has been "lots of enquiries, out of the blue". The website has helped many new customers, including restaurants and caterers in the region, locate Oven Head Smokers. The website has helped the company generate more sales and has helped to broaden its customer base.

Although the website generates many e-mail enquiries, orders are taken only over the telephone. Sometimes the people in the company are so busy that e-mail queries cannot be answered immediately.

Debbie Thorne emphasized that everything the company has learned about using the web for business, it has learned on its own. Its employees do not have technical backgrounds and before the company got its web page, they had not had much contact with the Internet. The company learns by doing. Before embarking on its experience with the Web, Oven Head Salmon Smokers was a bit apprehensive about the costs of having a website and the kinds of technical skills that would be required to manage it. However their experience has been positive. They have had a satisfactory return on investment and are now considering other things that they might do with the Web.

Oven Head Salmon Smokers is a craft-oriented company that emphasizes quality over quantity. Employees personally know many of their customers and can recognize their voice on the telephone. Visitors are encouraged and in the summertime, many tourists stop by. The company would like to grow, but not at the expense of quality. Unlike many small firms that serve only a local market, Oven Head Salmon Smokers knows how to ship its products internationally, and so the increase in international orders could easily be accommodated. However, it ships relatively small quantities of product. Oven Head Salmon Smokers did not anticipate that its presence on the web would result in a number of enquiries from potential customers

seeking much larger shipments of smoked salmon products than the firm could supply.

The company has a clear sense of its e-commerce needs at this point. It would be willing to learn more about the Web, and believes that training would be necessary, but prefers that the training be delivered on-site. The company would like to learn more about how to market its products on the Web, how to find information about markets and competitors, and possibly how to use the Web to communicate better with clients. It would also like its employees to improve their ability to use accounting software and spreadsheets. Because of its commitment to quality, the company is not pursuing rapid growth that might be possible through identification of major clients desiring large quantities of smoked salmon. Instead, it is pursuing a step-by-step growth, and may expand its smoking facilities when the time comes.

ACOA E-Commerce Case Study # 4. Cavendish Figurines Ltd.

http://www.cavendishfigurines.com
Borden-Carleton, PEI
(902) 437-2663

Cavendish Figurines Ltd. is Canada's only manufacturer of fine earthenware Anne of Green Gables figurines. The figurines are designed and sculpted exclusively by the firm, and hand-painted by its artisans, ensuring that each figurine is unique. The firm also retails a growing line of Anne products, Prince Edward Island souvenirs, and Confederation Bridge memorabilia. The company started production in 1989 in the Summerside Business Park with seven employees. With the opening of the Confederation Bridge, the owners seized the opportunity to build a new million-dollar integrated manufacturing and retailing facility in Gateway Village, at the foot of the Confederation Bridge. The company now employs 13 - 15 people during the busy summer months. It also does training and custom work.

The firm's initial marketing strategy involved a mix of retail sales at its factory, and wholesaling through leading jewellery and gift stores. Over time, the firm developed wholesale accounts across Canada, as well as a wholesale account in Japan. The level of interest from visitors to its factory was such that Cavendish Figurines also launched a mail order business eight years ago, leading to enhancement of its repeat customer base and strong increases in its retail sales. The firm now considers direct-to-consumer retailing as its marketing priority.

From the mid-90s onwards, the firm had been frequently approached by Web site designers seeking to help the firm establish an on-line presence. The firm had declined, feeling that the time was not right. "I knew the Internet was getting bigger," says Jeannette Arsenault, company co-founder, "but it was still too early." In 1999, the timing became right, as "opportunity and motivation" coincided.

The opportunity arose when a partnership of e-commerce suppliers approached Cavendish Figurines to pilot their e-commerce solution. Island Tel Advanced Solutions (ITAS), a subsidiary of Island Telecom, had developed an e-commerce catalogue product based on the N-gage solution, through a partnership with the Royal Bank. The third member of the team was Marshall Media, a multimedia Web site design firm. The team was credible, and the price, as a pilot venture, was very attractive. The motivation, meanwhile, stemmed from a new member of the firm who was knowledgeable about computers and strongly aware of the potential of the Internet. The daughter of one of the owners took on significant responsibilities for marketing upon joining the firm, and was very supportive of moving into e-commerce.

Work on the site began in early 1999. The founders, neither of whom consider themselves "techies," were closely involved in the design process, drawing on their brochures, catalogues, and other print materials to cut and paste a paper version of the Web site. This proved helpful in giving them an understanding of the

concepts.

Initial plans were to complete the site by June 1999, prior to the busy summer season. These plans went awry with the bankruptcy of the site designer, Marshall Media, in mid-1999, leaving the site incomplete. Cavendish Figurines completed its peak tourism season, then revisited the project in September 1999. Through meetings with Island Tel Advanced Solutions, resources were secured to complete the site development. The firm also engaged a trainer to develop the capability within the firm to maintain and enhance the site.

The firm had expected that the Web site would result in an expanded customer base, a broader reach to a global market, increased sales, and new wholesaler inquiries. These benefits, however, are as yet largely unrealized, due to relatively low levels of site visitation. This limited traffic is attributed primarily to initial difficulties in registering the site with search engines. Cavendish Figurines is now taking action to promote the site through a range of traditional and new media. Its new brochures, catalogues, product packaging, direct mail, and letterhead highlight the site. It has also undertaken its own initiative to register the site with search engines and to promote the site through other new media such as newsgroups, and is building its in-house understanding of these techniques.

The site is hosted by ITAS. Investments in new equipment have been relatively modest; the firm has replaced its existing computer with a new, Y2K compliant computer and obtained an Internet connection. Access to bandwidth has not been a problem to date, although it is thought that such problems may occur over the coming year as traffic builds.

The firm now considers its site "98% complete" and is confident that it will achieve its goals for the initiative. The difficulties encountered in the work, while unfortunate, are viewed in hindsight as part of the risk of being the pioneer. The firm knew when it embarked on the project that it was the pilot site for Island Tel and that things might not go smoothly. The process of developing the site and dealing with the difficulties has strengthened the firm and put it in a better position to fully exploit the potential of e-commerce.

The site is now getting hits and making sales, and more are expected as the marketing measures build site awareness and traffic. Cavendish Figurines identifies a number of factors as key to its anticipated success in business-to-consumer e-commerce:

- an internal champion, comfortable with, and interested in, information technology;
- ongoing development of in-house capability, to keep the site fresh and ensure that the company is self-reliant in e-commerce;
- Cavendish Figurines' well-established experience and success with a mail-order retailing strategy;
- the nature of the product line, strongly suited to e-commerce in that it is unique; enjoys global brand awareness; is low-volume and high-value; and requires very little follow-up service and support; and

- *the firm's high profile as a successful entrepreneurial venture, which garners substantial publicity and exposure in both the media and government studies.*

The firm has not yet engaged in any business-to-business e-commerce. It was noted that the volume and complexity of its wholesale transactions is relatively low, and that such an initiative would require price increases to wholesalers to cover the charges by the Internet Service Provider, its bank, and credit card carrier. More importantly, Cavendish Figurines wants to concentrate on its customers, and get its business-to-consumer e-commerce running smoothly, then eventually take the next step into business-to-business e-commerce.

ACOA E-commerce Case Study # 5. Trail Blazer

http://www.trailblazerproducts.com

Halifax. NS

(902) 453-5315

Their product is recognizable to many Atlantic Canadians, but the company is known to few - one of those little-known local success stories. Trail Blazer is a family-owned business that began operations in 1987. They manufacture camping, hunting and gardening equipment and are best known for their Take-Down Buck Saw -- a serious woodsman's backsaw that comes apart and packs into a compact aluminum tube. Although a small company (8 employees, including both full time and part time), Trail Blazer has impressive geographic coverage. They sell across Canada and in 48 states through Canadian Tire, LL Bean, Lee Valley, Mountain Equipment Co-op, Home Hardware and others. They also sell in more than 30 other countries around the world.

They have displayed their products on their web site for four to five years. Customers can use a button on the web site to place requests for a free hard copy catalogue. Prospective dealers can apply online to carry Trail Blazer products. Trail Blazer has a 'back door' to their web site through which they periodically upload names of new dealers, or download new dealer applications and requests for catalogues.

Trail Blazer appears to understand better than many companies the need to make their conventional advertising efforts and their web site complement each other, and make heavy use of magazine advertising, their catalogue, a newsletter and trade shows to promote their web site.

Trail Blazer has worked hard to develop relationships with distributors, dealers and retailers all over Canada and the United States. While they recognize the imperative of developing the online sales side of their business, they are concerned that this may alienate their dealers and distributors. Trail Blazer has chosen a win-win way to resolve this dilemma.

Customers visiting Trail Blazer's web site and wishing to purchase are directed to a page that provides contact information for the dealer closest to them. If there is no conveniently located dealer, customers are directed to web sites of dealers that sell Trail Blazer products, or are invited to dial Trail Blazer's toll free number to place their order by phone. This approach has numerous advantages:

- *By actively directing customers to dealers in this way, Trail Blazer enhances the value of their products in the eyes of the dealers. It encourages more dealers to carry the product, knowing that sales will be directed to them.*
- *By using the dealers existing shipping channels, order taking, order fulfilment and costumer service infrastructure, Trail Blazer can expand sales without having to expand their own investment in these*

facilities.

By collaborating with their dealers instead of competing with them, Trail Blazer makes it possible for dealers to promote Trail Blazer's products and web site without fear of losing sales to Trail Blazer's web site. Both parties win, but arguably Trail Blazer wins bigger because some of these dealers – LL Bean, Lee Valley, Mountain Equipment – have formidable advertising budgets. Trail Blazer sees a big peak in their sales when Canadian Tire prints a flyer featuring the Take Down Buck Saw.

Although it is early days yet, Trail Blazer is already seeing a big payoff from their Internet investment. When asked "Where did you hear about Trail Blazer?" 68% of those customers responding answer "Internet" - more than all other responses combined. This is despite the fact that Trail Blazer makes substantial investments in conventional trade show and magazine advertising.

With a decade of hard work behind them to develop products and position themselves worldwide in the outdoor recreation market – including gardening, one of the fastest growing consumer market sectors – Trail Blazer is poised for major expansion.

Trail Blazer is also a business-to-business e-commerce user. Their single biggest dealer, Canadian Tire Corp., requires all of its suppliers to communicate with them through Canadian Tire's Extranet. Suppliers use client software provided by Canadian Tire to access a secure web site where they can receive purchase orders and shipping instructions, send confirmation of shipping, check on purchase projections for the coming 6 months – all transactions with Canadian Tire are handled through this web site.

Like lots of new technology, when it works, it works well, but some minor glitches have been encountered with the electronic supply chain. Because there is no human contact point, suppliers have no way of querying an order. If something appears amiss with an order, or shipping instructions are missing, they can only follow instructions and have faith that the system works. This can be an adjustment for suppliers who are accustomed to dealing with a human being on the other end of the transaction.

The Internet has served Trail Blazer well and is proving a cost effective advertizing tool. The company has invested less than ten thousand dollars on its web site, while a single advertisement in a magazine may cost as much as $1,200.

ACOA E-commerce Case Study # 6. Innova Multimedia Ltd.

http://www.education-software.com

Stephenville, NF

(709) 643-3026

Innova Multimedia Ltd. is a developer of high quality, interactive, curriculum-specific, educational software. The company was founded in 1994 by two educators with over 40 years of combined educational experience in teaching and curriculum development. The company has translated this experience, plus a vision of the increasing importance that multimedia will play in the primary/secondary education system, into a thriving business that presently markets fifteen educational products either as CDs or via direct downloads from the Internet.

From a small beginning in Stephenville, Newfoundland, the company spent an initial period researching and developing the best ways to present their educational material, before bringing its first products to market, using CD ROM technology. Since then it has expanded considerably, currently employing 15 full time staff with backgrounds in graphics, computer programming, education and marketing. It has also opened a second office in St. John's, Newfoundland, whose work parallels the work in Stephenville. It also has home-workers, as far afield as Ripples, New Brunswick. Opening a second office and communicating with home-workers has presented the company with new challenges to ensure appropriate management and administration of a remote site. Using the Internet as a communications tool has allowed the distances to be bridged seamlessly, with voice and data moving between centres in real time.

"We are developing an international market niche in the curriculum-specific, educational multimedia area," says Joe Wiseman, President. He indicates that multimedia is predicted to be a leading industry within the Information technology sector and educational titles will comprise at least 20% of this market. Innova Multimedia is working hard to ensure that they are ready to capture a significant portion of this growth.

One way that Innova Multimedia is moving to capture these markets is use of e-commerce. In 1996, with sales of their first products beginning to expand, they moved to establish an e-commerce presence through the Internet. The company already had an Internet account and graphic artists and marketers to build an attractive, interactive website. Innova Multimedia chose to develop and maintain its own site, but decided to use a Canadian company to host its site, and an American company to handle its transactions. By using the American company, Innova Multimedia is relieved of all the difficulties that might arise with transactions, bank accounts or security.

Innova Multimedia handles all its website maintenance in-house using its own expertise. Given the importance of its Internet sales, currently about 20% of total sales, it pays a lot of attention to this,, with daily checks by the webmaster and a review of the site's effectiveness every two to three weeks. This may result in adjustments, or a rebuild of parts of the site to update information and new products. They also avail of

a free service where an outside company checks the linkages and e-mails them if there is a need to repair any of the links to other sites. During the latest month for which data is available (Dec. 1999/Jan. 2000) the Innova Multimedia website received 67,342 visits. This attests to the quality of the website, the effective links that the website has and probably Joe Wiseman's comment on the growing importance that educational titles will assume in the future multimedia market.

Recently Innova Multimedia changed to another U.S. company to handle the transactions aspect of its e-commerce. The move was made because the new company offered better service and has as one of its connections, one of the largest "download" providers in the world. As Innova Multimedia sees the downloading of its products as the way of the future, it feels that it will benefit from the move. It is interesting that the company receives several queries a week from companies offering various packages to attract companies, such as Innova Multimedia, to move to their particular hosting site or to use their transaction services. Of all the companies that have contacted Innova Multimedia over the past year or two, they cannot recall being contacted by one from either Newfoundland or Atlantic Canada. When asked whether they would consider such a move if they received a contact, the response was probably not at this stage, given the difficulties experienced with setting up banking and security facilities.

Innova Multimedia is a good example of a progressive small company that is using e-commerce to forge a place for its high tech educational products in international markets, as well as using an Intranet to maintain efficient communications with a dispersed workforce.

ACOA E-commerce Case Study #7. AtlanticRider.com

http://www.AtlanticRider.com

Riverview, NB

1-800-431-5888

In Canada, approximately $3 billion is presently invested in horses, tack, and equipment. The total economic impact of the horse industry in Canada is somewhere between $2 and $4 billion. The horse industry in Atlantic Canada is growing quickly, especially in New Brunswick and Nova Sotia. The Atlantic Canadian regional horse industry comprises about 17,000 horses, their owners, suppliers, about 4000 non-family employees, and about 67,000 people who ride horses for enjoyment but do not own one themselves.

AtlanticRider.com is a startup company that addresses the needs of horse owners and horse riders. It is most like an online magazine, because it publishes electronic information about horses and horse events in Atlantic Canada. However, it is best characterized as an "infomediary", or a provider of information and communication services that allow people in an industry to communicate with each other. Because it offers comprehensive online information and communication services to Atlantic equestrians, it can also be considered a "portal" or gateway to an online community. Traffic has grown to over five hundred visitors per day in less than three months.

AtlanticRider.com was established in Riverview, New Brunswick, in October 1999 by Donna Sears, soon after her graduation from the University of New Brunswick in Saint John's MBA program. AtlanticRider.com offers a wide variety of information about the horse industry in Atlantic Canada, including an events listing; a weekly electronic newsletter; show results; a directory of clubs, stables, tack stores, and other equestrian services in the region; classified advertisements; web design and hosting services, catering especially to the horse industry; editorials and articles; a photo gallery; a library of horse-related videos that clubs can borrow for free, and a rider's forum.

In this business model, some services such as information, directory listings, and web hosting for not for profit organizations are free. Sources of revenue include electronic business cards, commercial classifieds, advertising on the front page, commercial web site design and hosting, and advertising in e-Rider. Further, some merchandise of interest to horse owners is currently offered for sale, and a wider range of merchandise for sale on-line is planned.

The business was bootstrapped by its owner, who took short courses in web page design and HTML in order to prepare and manage the website herself. No external debt was incurred in the development of the business, and it is expected that the business will become self-sustaining within the year. The site has been advertised in regional paper media and in horse industry publications. However, word of mouth within regional equestrian circles has been the most powerful driver of the development of a virtual regional community of people with interest in horses. As a result of her exposure and experience, Ms Sears has

been invited to speak to equestrian conferences on the topics of electronic commerce in the horse industry and marketing equestrian services. This exposure has resulted in further use of the site.

The idea to establish an infomediary service for the regional horse industry came to the owner during a presentation on the demographics of horse owners, who fit the profile of Internet users in terms of proficiency with home computers, education, and disposable income. Ms Sears had worked in the regional horse industry for twenty years and was familiar with the industry and known within it. This familiarity has facilitated the development and establishment of AtlanticRider.com.

AtlanticRider.com does not handle payment or transaction processing yet, but expects to do so in the future. Clients, especially specialized equestrian stores that may wish to sell items through AtlanticRider.com, are not yet ready for transaction-based electronic commerce. Many are just now getting online themselves with their websites. The firm's online publication and services can compete with paper-based publications because of the speed with which information can be received and diffused online, and the lower cost structure of the electronic venue.

AtlanticRider.com is an electronic commerce business model that is entirely dependent on the expanding use of web technologies by people who are involved with horses. It could not exist without the World Wide Web. Three important lessons learned from AtlanticRider.com are:

- *the importance of networking within the user community*
- *the importance of understanding the industry context of an online venture*
- *and the importance of a commitment to systematically growing a business as opposed to seeking a get-rich-quick scheme.*

The necessary technical skills to start up the venture were acquired along the way. According to Ms Sears, "it is amazing how fast you learn" when involved in a small online information business.

AtlanticRider.com is an excellent example of how entrepreneurship and business vision can lead to new firm formation in a new industry. That AtlanticRider.com is flourishing without the infusion of external capital and without the use of expensive technical services shows that it is possible to launch a promising web-based small business in Atlantic Canada if one is prepared to dedicate oneself to the task, plan carefully, and learn quickly.

ACOA E-Commerce Case Study # 8. Infotech Canada Inc.

http://www.infotechcanada.com

St. John's, NF

(709) 726-4736

Infotech Canada is a multi-faceted Internet Commerce company founded in 1996 by Victor Bonnah and Steve Clarke. Both of the principals had previously run their own Internet businesses, which have since been brought together under the umbrella of Infotech Canada. Mr. Bonnah's company, Webpage.ca, focuses on web site development and web hosting services for companies and organizations located throughout North America. While at university, Mr. Bonnah's initial interest in the Internet was as a medium for selling stocks and bonds, a concept that had not been fully developed at the time. Mr. Clarke's company, Avalon InterConnect Corp., is an Internet service provider offering Internet access, Web application hosting, programming using Microsoft Active Server Pages technology, and Internet security services.

Infotech has grown consistently over the past five years, with employee numbers growing annually. They anticipate doubling their business again in 2000.

Much of their business now comes from clients in the United States. This change in market focus has evolved because of a wider and more rapid acceptance of the Internet as a new business medium in the U.S. compared to Canada, and particularly Atlantic Canada. They have found that American companies have been much quicker to realize the business potential of the Internet and exploit it. U.S. companies are consequently much more eager to invest in developing and maintaining their Internet sites, and more willing to recruit such services. Infotech's U.S. clients are looking for high quality, functionality, and performance, and are prepared to pay for it. Initial development starts from US $10,000 (approximately CA $15,000). Local and Canadian companies are, in general, much more conservative in developing budgets associated with their Internet activities. Typically, they also set unrealistic expectations. A good Web site may take several months to design and implement, yet because companies fail to recognize the need to market and support their web sites through traditional media, their results usually fall below their expectations. Web search engines alone are not enough to market a web site (some may not even list new sites for upwards of six months).

It has become obvious to Infotech that the growth market for them is, at present, in the United States. The company's strategy is to compete on a basis of service rather than price, and the favorable exchange rate also marks the United States as a lucrative market.

Infotech's success is due, in part, to their focus on providing value to their clients. One of the motivations for merging Webpage.ca and Avalon InterConnect was to offer a complete and integrated Internet service package to their clients comprised of 1) Web site design and development, 2) software programming, and 3) Internet services. Most other Internet service companies, they explain, provide one of these

complementary elements, but rarely all three. The benefit of their approach is that they are able to deal with both the creative and technical aspects of Web services without the client having to involve a third party.

A second reason for Infotech Canada's success has been their investment in understanding the Internet environment. For example, the company spent considerable effort examining how Web search engines work and how people look for information on the Web. This has had two benefits. By purchasing intuitive domain names, carefully selecting and establishing linkages, and employing search engine look-up techniques, they have been able to direct companies in the market for Internet services to their own site and examples of their work. It has also dramatically enhanced their ability to design a Web site for their clients in a manner that will ensure exposure to target markets and garner high traffic rates. Demonstrated ability to attract customers to a client site is an important marketing feature for Infotech Canada, and they will frequently provide guaranteed results using their own software to track visitors and collect statistics for this purpose. The company is also keenly aware that advertising and promotion outside the Internet is essential to attracting customers to a client Web site. In fact, they estimate that if a client budgets $10,000 for development of a Web site, a further $20,000 should be budgeted for promotion of that Web site. While they will often make recommendations regarding such supporting advertising and promotion, they do not provide agency services.

A third critical factor has been Infotech Canada's focus on seeking out and employing the latest multimedia Web authoring tools and Internet technology to fully utilize the capacity and features of Web browsers as they emerge. Creating a strong positive first impression is important to their clients, and being able to provide multimedia and other techniques provides the required impact.

Messrs. Bonnah and Clarke and most of their employees are native Newfoundlanders, and would like to continue to build their business in the Province. They realize, however, that Newfoundland and Atlantic Canada will not provide a viable market for their services within the foreseeable future. The Canadian market may provide some opportunity, but their focus is clearly on the United States. To date, they have been able to effectively service this market because of the availability of high speed Internet access at relatively low cost. It does not matter to their clients whether they are located in the U.S. or Canada, as long as they can provide quality services. The company is determined to continue to benefit from future upgrades to Internet infrastructure in Canada. For example, they are concerned that the planned CANet 3 fiber optic network, which promises to provide a much higher capacity "pipeline", is initially supposed to terminate at Halifax without being extended to Newfoundland. Reliability is also a problem for them, as the current off-island network connection experiences regular interruptions, which affects all Internet Service Providers in Newfoundland.

Finding skilled workers can also be difficult. While universities and both public and private colleges are producing well-trained graduates, they tend to be generalists and often have unreasonably high expectations. Infotech needs specialized, experienced people able to perform highly professional work in specific areas such as XML and web application development. The company sometimes contracts outside workers from as far away as Japan, Turkey, and Australia to do specialized pieces of work. These contracts

and the provision of end product are conducted via the Internet.

Infotech Canada has been fully self-financing to date, believing that venture capital is not readily accessible in Canada, and particularly locally. This factor has constrained their growth relative to similar companies in the U.S., where they have observed capital to be much more readily available.

Infotech Canada is a good example of an Atlantic Canada company that has grasped the opportunities from global markets presented by the Internet, and has found a way to successfully exploit these from its local base.

5.0 Conclusions

Canada has positioned itself to take advantage of the rapid growth in e-commerce and has already achieved an enviable degree of connectivity. In spite of this effort, Canadian companies are not taking full advantage of the opportunities and appear to be falling behind the United States in adopting e-commerce. Atlantic Canada has been a part of the Canadian effort and SMEs in the four Atlantic Canadian provinces are significant users of the Internet. However, when the focus becomes companies that have established websites, only Nova Scotia is close to the Canadian average, while the other three provinces are well below the national average. Further, this study shows that even when examining SMEs in Atlantic Canada that have websites, the majority have not progressed to full e-commerce status. Of the 138 SMEs surveyed in this study that had websites, only 21% were judged from their survey responses to have progressed to Level 4 (complete transaction and payment capabilities through the Internet). *If Atlantic Canada falls behind the rest of Canada, then it may become difficult to catch up in this fast developing economic area.*

The concern that this observation raises is that SMEs in Atlantic Canada, and the Atlantic Canadian economy, may fall even further behind the national performance. Already there is evidence of a strong trend towards Canadians purchasing online in the United States. If this trend were to continue we may lose a significant portion of our retail trade to the United States and suffer the economic consequences. At the same time there is evidence that Canadian companies are attracting a certain amount of foreign trade through the Internet, which might offset some of the losses to the United States.

The challenge that faces the region is what we can do about this situation. The critical question confronting us is whether SMEs in Atlantic Canada are ready to enter the world of e-commerce and compete in this new global economy. At present, based on this report and the evidence in other studies, the answer appears to be a "guarded no". However, there are examples of Atlantic Canadian SMEs that are using e-commerce successfully to compete in global markets. The case studies presented in this report provide evidence of this, suggesting that the challenge can be met

if awareness and motivation are present. The reason that these successes are relatively few to date is based on a number of underlying factors. These factors include:

- *a general lack of awareness among SMEs of what e-commerce is*, both in terms of Internet technology and new business models needed to function effectively in this new environment;
- *a lack of marketing skills* required to ensure that a company not only has a presence on the web but has an effective presence that receives a high number of visits from prospective clients/customers;
- *a lack of the mechanisms to provide full transaction capabilities* where these are required;
- *a lack of the high speed ubiquitous connectivity* needed to ensure that all SMEs in the region can participate fully in this growing sector of global trade;
- *a lack of knowledgeable bankers and investors* who are fully cognizant of the barriers and advantages of e-commerce and can provide realistic judgements of the potential success or failure of a proposal, and
- *a lack of co-ordinated government programs* to assist and encourage SMEs to participate in e-commerce.

Awareness of the requirements to become a full e-commerce participant and availability of the necessary support mechanisms to enable this to happen, are the most significant issues. This study has focused on a sub-set of all the SMEs in Atlantic Canada that have already committed to a web presence on the Internet. The implication is that there vast majority of SMEs have not proceeded this far as yet, and have little interest in proceeding this far in the near future.

We need to develop programs in Atlantic Canada that raise the e-commerce awareness of SMEs and provide them with the knowledge that will allow them to make informed decisions on becoming e-commerce enabled. To date, when this type of information is presented to companies, it focuses

on Internet technology and not on e-commerce as a business model that either complements existing commercial endeavours or provides alternative mechanisms for trade. Further, SMEs need to be made aware of all the costs that they may need to incur to become fully enabled, including the costs of ensuring that websites have high connectivity and are well-advertized.

E-commerce awareness should become a priority for all agencies that deal with the concerns of SMEs in Atlantic Canada. Programming is needed that provides SMEs with information that deals with e-commerce technology, business practices and the successful marketing of a company's products and services using the Internet, so that these SMEs can make informed decisions. This survey indicates that there are resources in the region, in the public sector, in universities and colleges and within the private sector, that could assist in developing an e-commerce awareness campaign capable of reaching all of Atlantic Canada.

Present government programming to support e-commerce is uneven across the region, with varying levels of support in the four provinces. If this support were better co-ordinated it may be more effective, especially if it were focused on the issue of raising awareness and building a sound knowledge base in support of e-commerce. The potential to support such a move is present in a few educational programs in the region, the ones at Dalhousie University and the University of New Brunswick Saint John being notable. As well there are college programs, the efforts of the E-commerce Centre in Saint John and pilot programs such as the one initiated by Operation ONLINE in Newfoundland, that could form the basis of a regional awareness and support program for SMEs deciding whether to include e-commerce in their current suite of trading mechanisms.

E-commerce awareness needs to be extended to include B2B activity involving SMEs in the region. One of the B2B models that has created such growth in the United States revolves around large supply chains (Boeing, General Motors etc.) that are being transformed into large dynamic trading networks by electronic means. Advanced e-commerce enabled supply chains are not common in Atlantic Canada, although there are large companies that form the hubs and have established supply chains within the region. If these were e-commerce enabled they would have the potential to draw in local SMEs and upgrade their technological capabilities. This has happened to date only

to a limited extent in certain industries (groceries, aeronautics) and leadership is required to make these larger firms aware of the possibilities that B2B presents. It would also be important to examine emerging sectoral e-commerce models in industries of importance to the region (utilities, forestry and forest products, agri-foods, tourism, etc.) in order to determine ways that Atlantic Canadian firms can participate in, or even lead the creation of new forms of dynamic sectoral trading communities.

It appears that in Atlantic Canada, informal networks of SMEs are forming to exchange information and trade where possible with other SMEs in the region and elsewhere. This networking is an encouraging aspect of the expanding connectivity that has taken place over the past few years. This networking should be fostered where possible as it provides an effective communications link between SMEs that could allow these firms to create cooperative associations that encourage SMEs to compete in international markets. While this networking does not fit any of the accepted B2B models, it does represent a commercial activity that has the potential to grow among Atlantic Canadian SMEs, given further encouragement.

Awareness needs to extend to the suppliers of e-commerce products and services so that they can provide guidance to companies regarding e-commerce business models as well as providing technical solutions and design of websites. Even more important is the need to encourage bankers and investors in the region to become familiar with the operations of SMEs that are operating on the Internet and to understand the risks and opportunities that these businesses present. There are concerns that the banking community does not understand the e-commerce requirements of SMEs in Atlantic Canada. *Action is needed to initiate a dialogue between all the parties so that these differences can be resolved to the satisfaction of all.* At present there appears to be little investment in e-commerce ventures in Atlantic Canada (mirroring the situation in the rest of Canada). By contrast, investment in e-commerce ventures in the United States in at an all time high, with eager investors queuing to participate in the latest IPO.

Connectivity is an important issue that needs to be addressed in order to avoid regional disparities. At present the major centres across Atlantic Canada have broadband access to the Internet,

allowing companies to exchange information readily. Future proposals to develop a national high speed link from Victoria to Halifax excludes parts of the region that need this type of connectivity. This issue has been raised in one of the case studies and others have expressed similar concerns. At the other end of the spectrum, there are remote areas in Atlantic Canada where SMEs experience difficulties with even narrow band connectivity. One company in the survey indicated that they had trouble responding to queries on their website as it required a long distance phone charge to access their e-mail account (but they did have a website!).

Atlantic Canada, similar to many other regions in North America, has undergone a shakeout of e-commerce suppliers. Many small website developer companies have either disappeared or amalgamated to form stronger, more competitive entities. At the same time, new supplier companies have been formed to provide a comprehensive range of services. If there is one weakness among supplier companies in the region it is the ongoing focus on technology and the lack of emphasis on the associated business models and marketing strategies that companies need to understand when adopting e-commerce. Even this appears to be improving as supplier companies move to include these services to their clients.

Many firms starting out to become e-commerce enabled do not have a clear idea of what they need before they approach an e-commerce supplier. Efforts to raise the overall awareness of these firms will help, but there is a need for a check list of basic issues that should be addressed by a supplier. These issues may include complexity of site (high visual appeal versus speed of downloading) and the linkages that a supplier builds into the site to ensure that it will be effective. There is a need to develop this check list so that those firms wanting to start out will have an idea of how to approach suppliers.

The conclusions outlined above can be summarized in relation to a model for e-commerce adoption, featuring the following continuum:

- **Pioneers** - firms with technically brilliant leaders or personnel, who are at the leading edge of innovation, typically with in-house solutions. These firms do not need much assistance

from any source. The challenge is to draw them into interacting with their slower peers. There are a few examples of such firms in Atlantic Canada.

- **Early Adopters** - firms who are leaders in other areas of business, notable for innovative, successful products, marketing approaches and business strategies. Firms with an existing mail-order marketing strategy are particularly likely to be leaders in this area. These firms generally have a business planning mind set and while government support to prepare the business case for e-commerce may be welcomed, their primary need is for sound, reliable e-commerce supplier performance. There are many examples of such firms in Atlantic Canada, sometimes succeeding and sometimes experiencing delays and difficulties in moving to Level 4.

- **Followers** - this group represents the majority of SMEs in the region, who may have a website in place or are considering establishing one. Many of these firms feel that e-commerce is something they should be involved in but do not have the knowledge to make informed decisions or develop business plans. Therefore, they venture into e-commerce in a "trial and error" manner, starting with brochure-ware and making incremental additions if warranted by results. These companies usually continue to do business as usual and graft their Internet presence onto their normal operations. Often these firms view their experience as either mildly beneficial or neutral, their investment being too small to attract much attention. These firms need to develop an understanding of the implications of the Internet and e-commerce, with emphasis on its business implications, not its technological aspects. Following an awareness building stage they need assistance and encouragement to prepare a business case for e-commerce in their firm.

- **Laggards** - These are firms that operate with conventional technologies (phone, fax) and have shown little interest in the Internet. This group needs significant awareness building and are unlikely to return significant benefits in the short term from government intervention. The majority of SMEs in Atlantic Canada fall into this category and the real challenge facing the region is to introduce these firms to advantages of e-commerce and

build awareness.

This model suggests that any program that sets out to increase e-commerce adoption in Atlantic Canada should initially focus on the early adopters and the followers. The early adopters are probably ready, with guidance, to reach a reasonable state of e-commerce enablement, which will show positive results in s relatively short time. The followers will require nurturing. Raising their awareness is a first step that will provide them with the knowledge to make decisions that can make their Internet presence rewarding. At the same time, the laggards will need attention. Basic awareness raising programs, such as the recent mail-out of the Industry Canada brochure "Beyond the Website", as well as the information workshops that ACOA sponsored in 1999 are excellent examples of this basic awareness building process.

The challenge is provide the leadership that will bring together all the resources that do exist in Atlantic Canada to achieve this goal. This will require both co-operation and leadership - a role that ACOA could well assume as it has on previous occasions, using its resources to bring together the interests within the region to encourage SMEs to reach their potential through the deployment of e-commerce for the economic good of Atlantic Canada, and move us from behind the rest of Canada to a position of leadership.

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Appendix A

E-Commerce Questionnaire

Company Name: **Contact:**

Telephone No.: **City, Province:**

When Contacted:

1. **What is the size of your company?** (To nearest 10)

   In what sector does your company operate?

   (retail, manufacturing, resources, service, etc)

2. **What functions does your company perform on the Internet (or other electronic communications system)? For those functions that you are using, could you provide an approximate date when you started using the function.**

   (Please respond to each issue)

Y/N	Date (Yr)	
		• sending and receiving e-mail;
		• surfing the Internet, visiting websites;
		• presenting your own website;
		• internal company communications (Intranet);
		• communicating with other companies (Extranet);
		• conducting secure business transactions with consumers;
		• conducting secure business transactions with other businesses.

3. **What was it that attracted you to start using e-commerce?**

   (Please respond to each issue)

Y/N	
	• Ability to be open 24/7, around the world

- gather strategic information on customers
- target advertizing and marketing with precision
- reduce inventories, supply chains and cycle times
- offer more responsive customer service
- compete successfully with other companies
- join electronic supply chains
- other (Please provide detail)

4. What barriers had to be overcome to establish your company's e-commerce presence?

Y/N

- Lack of knowledge,
- costs,
- availability of services,
- return on investment,
- lack of qualified staff,
- other (Please provide details).

5. Did you hire someone (individual/company) to set up your site, or did you do it yourself?

Hired someone_____ Did it yourself_____

If you hired someone, was the service you received satisfactory? Yes____ No____

6. Who maintains your site now?

Y/N

- Maintained in-house
- Maintained by supplier company
- Maintained by company other than supplier
- Other (Please provide details)

7. Has your venture into e-commerce met your financial expectations, in terms of:

Y/N

- increased sales,

- increased cost savings,
- broader customer base,
- quality of services provided,
- other (Please provide details)?

8. **Does your company operate within an established supply chain(s)?** **Y____ N____**

9. **If so, are there key companies in this chain that required you to use an e-commerce system (EDI, web-based or other)?**

   Y____ N____

10. **Does your company possess an Intranet or Extranet?** **Intranet____ Extranet____**

    Or does your company participate in another company's Extranet? Y___ N___

    If so, what business activities are undertaken on these networks?

    (Please provide detail)

11. **If your company is carrying out e-commerce with another company (business to business e-commerce) how has this affected the management or operations of your company?**

    (Please provide detail)

12. **What has been your experience in attracting business to your website?**

    (Please provide detail)

13. **At this stage of your company's use of e-commerce, what are your current specific needs in order to be a more effective user of e-commerce and obtain a better return on your investment?**

    (Please provide detail)

14. **What advice, if any, would you offer to e-commerce newcomers?**